

New Scripts for Group Model Building – Online Questionnaires and Open Loops

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Abstract

We introduce prototypes of two new GMB-scripts that help overcome the following issues:

Firstly, GMB-workshop participants often have little time available. Building a seed model beforehand to use workshop time more efficiently meets the difficulty that participants' time for eliciting information for seed model construction may also be limited. To alleviate this, the first script guides on how to use online questionnaires to enable to collect necessary information from the participants before the GMB-workshop starts.

Secondly, sometimes undesirable system behavior results from potential feedback loops that are not closed in the real system. Existing scripts however, aim at eliciting closed feedback loops only. The second script helps participants find open loops the closure of which may improve system behavior. The creativity for finding policy options that is unleashed by this script can be used by subsequent scripts.

Keywords: System Dynamics, Group Decision Making, Group Model Building, Scriptapedia

Introduction

Jay Wright Forrester mentioned the importance of accessing the mental database of managers for building System Dynamics models of strategic problems (Forrester 1992; Rouwette & Vennix 2006). Vennix (1996) developed the method Group Model Building (GMB) to enable accessing the mental models of involved clients in a structured and systematic way. Different from expert modeling, the method enhances the feeling of ownership of the clients with the outcomes, because the problem owners contributed to the solution and this circumstance fosters that the model has a beneficial impact in the real world (Rouwette & Vennix 2006).

Three basic assumptions of the method are (compare with Vennix 1996): 1. Individuals are limited by their information processing capacities, 2. People think in terms of causal processes with hidden assumptions and 3. Different viewpoints in a group setting can be very productive. GMB enables integrating different perspectives into a more holistic shared mental model. The method aims to make hidden assumptions of the participants transparent and to avoid premature ineffective solutions are put into action, but rather that sufficient deliberation has taken place. Rouwette et al. (2006) distinguished goals of GMB on the individual and on the group level. On individual level, the goal of a GMB project is to initiate behavioral change and to foster commitment with the results. On group level, the goal is to increase the quality of communication by using a shared language and to facilitate consensus-making on problem causes and potential solutions.

Early adopters of the GMB method mentioned that the method lacks clearly defined methodological guidelines (Andersen et al. 1997). Therefore, the idea of a “catalogue of tested and refined procedures [to] build a continuous stream of small-group-activity” (Andersen & Richardson 1997) was born. This catalogue with standardized protocols, so called *scripts*, to construct policy-oriented System Dynamics models was named *Scriptapedia*¹. The early authors of this online published handbook mention various reasons for the aim of opening the black box of modeling interventions (Hovmand et al. 2011) by documenting the processes of planned small group activity. Firstly, scripts help to clarify different roles in the modeling team (e.g. facilitator, modeler/reflector, process coach, recorder and gatekeeper) and to serve as a basic unit to structure behavior in GMB sessions resulting in scripted behavioral time blocks. Secondly, these time blocks and individual scripts can be sequenced into a *scripts map* as “a framework for effectively combining [...] scripted activities, products, and deliverables into a formal network to enable facilitators to construct appropriate combinations of workshops” (Ackermann et al. 2011) and hence to develop a complete GMB-workshop-plan. And thirdly, from the perspective to evaluate GMB effectiveness – especially for the aim of doing cumulative research – it is necessary to use such shared conceptual frameworks and components of modeling (Rouwette & Vennix 2006).

In this paper, two new scripts are introduced with the aim of contributing to the catalogue of tested and refined procedures – Scriptapedia. The first script introduces preliminary online questionnaires to allow for building a seed model before the GMB workshops starts. This procedure helps to dedicate more time in the GMB workshop to other important tasks and activities. Especially when time is scarce and participants are located far apart from each, this script is intended to be used. The second script introduces a technique to enable structured thinking about open feedback loops of real-world systems that may require closure to alleviate problematic system behavior.

Script 1: Preliminary Online Questionnaire

The participants and the session organizer of a Group Model Building workshop are often located far apart from each other and from the session organizer. Therefore, the organizer may be unable to meet up with each participant in person for the aim to conduct preparatory interviews due to the incidental costs and limited available time. Especially, if a preliminary model is intended to be used in the GMB workshop, Vennix (1996) suggests – in such cases – to mail questionnaires to the participants to collect required information. Vennix mentions that – on the one hand – the answers in questionnaires are more to the point than in interviews, but – on the other hand – a low response rate is the most important danger in carrying out mailed questionnaires.

Description

In this script, an easy to accomplish and technically more up-to-date alternative to mailed questionnaires is suggested. The use of online forms simplifies setting up, filling out and evaluating of questionnaires, thereby minimizing the time for both sides and resulting in a higher response rate, so the assumption. This GMB-script is to serve as a guide line on how to use a preliminary online questionnaire to build a seed model. The aim of the approach is to a) collect the necessary information that allows the session organizer to become more familiar with the topic, b) to serve as groundwork for building a seed model and c) as a first step for initiating rapport between the modeling team and the participants.

¹ The current version is available in form of an open source *wikibook* via the URL <https://en.wikibooks.org/wiki/Scriptapedia>

For conducting online surveys, different suppliers that offer services to build and evaluate online questionnaires are available via the internet (e.g. Google Forms², Typeform³ or Cognitiforms⁴). Instead of using such online services, it is also possible to build an online form with available scripting languages (JavaScript, Ruby, Perl, PHP, etc.), but this approach may be more time consuming. The use of online forms allows to quickly collecting and evaluating information, as there are features available to automatically gather and aggregate all the participants' answers in form of an exportable *Excel* sheet. This procedure is more convenient than mailed questionnaires for the participants, as each participant just needs to click on a link and fill in answers in a webform on an internet page. After the appropriate tool for establishing an online questionnaire is found, the work flow is as follows:

1. Set-up of questionnaire
2. Send link of the questionnaire to the participants
3. Evaluate questionnaire
4. Build the preparatory model

A detailed description of these steps can be found in the Appendix 1. Important for setting-up the questionnaire is to have a problem definition available. Hence, the initiator of the intended GMB-workshop needs to know at least the problem context – in form of a textual description or in form of a graph over time chart of the problematic behavior – to be able to derivate a problem definition.

There is much freedom for the setting-up of an online questionnaire. As a generic approach a questionnaire consisting of three parts is described here. In case of particular circumstances, the questionnaire might deviate from this standard triplet structure. In the first part, the questionnaire checks if there is consensus among the participants in regard to the problem definition. In the second part, the participants are questioned to name the key variables in the problem context. And in the third part, a block of questions asks about which factors worsen or lead to an improvement in respect of each key variable. This approach results in having a list of key variables and a list of influencing factors on these key variables generated by the participants, enabling to build a seed model. For the building of the preliminary model, all key variables are carried together. A rank order is based on which variables and influencing factors are named by how many participants. The experienced model builder needs to identify duplicates in concern of this ranking list creation. Of course, not all variables can be recognized in the seed model. The ones which are excluded are used as a pool of variables put on the side of the black board in the first model building session. Having this pool of variables collected before the first session enables to use the script *Dots* as follow-up script to collectively assess how important different influencing factors are within the problem context.

Experience

The use of a preliminary questionnaire was tested within the scope of a GMB-workshop at the Technical University Munich. The two-day workshop with in total eight participants, one facilitator and two modelers, was part of the research project MultikOSi – Decision Support System for Public Events: Multicriteria Approach for Openness and Security.

At the beginning of the workshop a vague problem description was provided: “The problem

² https://www.google.com/intl/de_de/forms/about/

³ <https://www.typeform.com/>

⁴ <https://www.cognitiforms.com/>

results from the relationship of mutual tension between openness, security and economic feasibility in the context of urban event management.” In other words, the described problem results from the situation that optimization efforts in the context of this trade-off triangle which aim to improve one factor may worsen the other ones. Therefore, the goal was to map the causal interdependencies among these different criteria. Because the available time was limited due to the spatial distance among the participants and resulting travel costs, the decision was made to set up an online questionnaire by using Google Forms to collect required information enabling to build a seed model. Fortunately, the response rate to my request to fill out the preliminary online questionnaire was 100 %.

Firstly, the participants were asked, if they agreed with the problem description (check boxes with the options *agreement*, *partial agreement* and *disagreement* and a text box asking for elaboration of this definition). Luckily, the problem definition already provided clarity on the key variables in the problem context. Therefore, the main focus was to clarify which factors influence these key variables (several open question text boxes in which different variables could be written). In total 59 different influencing factors have been identified by the participants. The seed model that was built as the main result of the preliminary online questionnaire is shown in Figure 1.

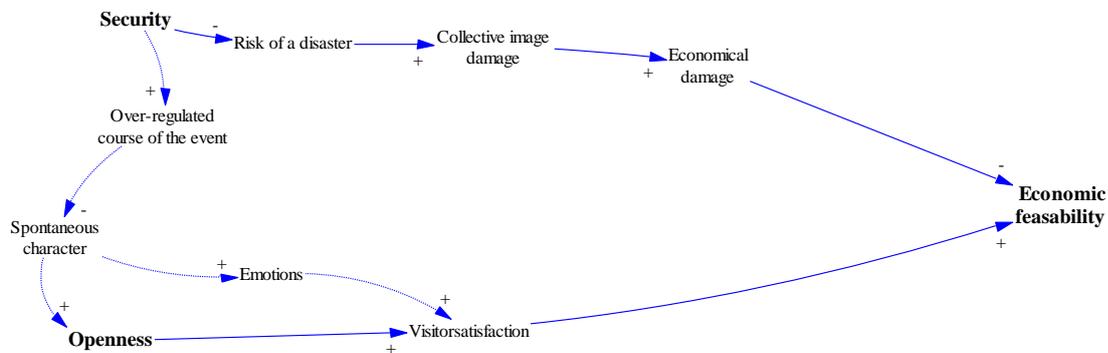


Figure 1: Resulting seed model from the questionnaire used as starting point in the first Group Model Building session.

Some modelling experience is necessary to build such a seed model. Advice on how to build a preliminary model can be found in the script *Causal Mapping with Seed Structure* (Scriptapedia & Contributors n.d.). One advantage of starting with a preliminary model as boundary object (Black & Andersen 2012; Black et al. 2004) in the first session, is to describe the causal mapping process and the symbols used by System Dynamics in the problem context owned by the participants. All the influencing factors that were not included in the preliminary model are used as a pool of variables in the first session. To prioritize these different variables, the previously mentioned script *Dots* was used as first group activity. This *Dots* script is very appropriate as a follow-up script, because the online questionnaire can be characterized as a divergent group activity producing too many variables to be all used in the workshop. This plentitude of variables makes it necessary to follow with a convergent group activity for prioritization (see Figure 2).

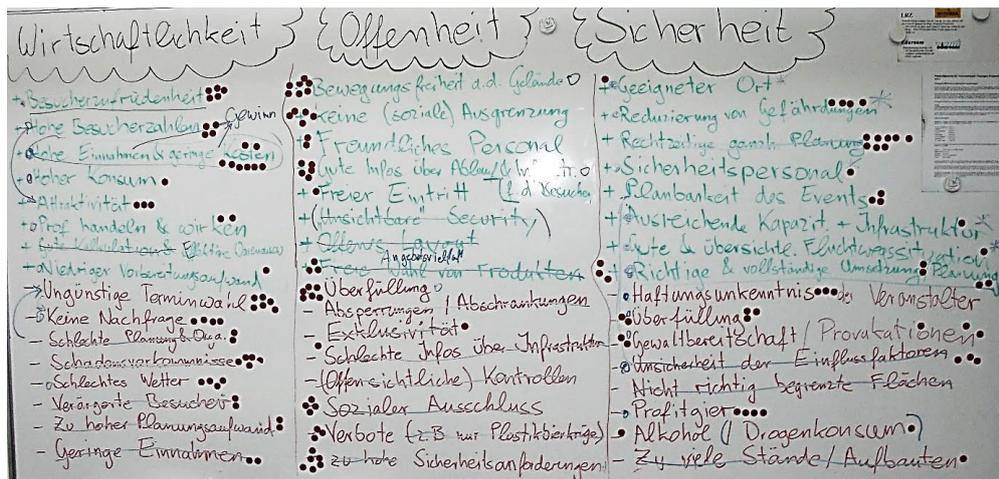


Figure 2: Prioritization of the different collected variables from the online questionnaire with the script *Dots*.

Script 2: Find the open Loop

There is also a script available for finding non-existing feedback loops that could improve system behavior if they were installed (*initial policy options* Scriptapedia & Contributors n.d.). However, the script develops policy options from the participant's narratives directly, in a nominal-group-technique fashion only. Sometimes however, policy options can also be developed from the inspiration of model structures. There are e.g. cases where the system diagram developed by participants contains a feedback loop in in partial form (most variables already present) lacking closure. If that loop was closed in reality and only open in the diagram, the script *ratio exercise* (Scriptapedia & Contributors n.d.) could be used for eliciting it. If however, the loop also lacks closure in reality, and this lack of closure is potentially the cause for undesirable system behavior, it may be harder for participants to see this.

Description

The script outlined below aims at aiding participants in finding such open feedback loops. If carried out successfully, and the loop is described in a generic form, this unleashes creativity for policy options that can be utilized by subsequent scripts that take from of concrete feedback loop options.

The script is usually invoked when the development of the model structure in a GMB-workshop reaches a point when either the facilitator or the content coach see an open feedback loops that they suspect may also be open in the real system, and that this lack of closure may be an underlying cause of undesirable system behavior. In case of the content coach noticing the open loop, a silent signal the facilitator is advisable (e.g. handing a piece of paper to the facilitator indicating an open feedback loop). If the facilitator decides to carry out the script, the first step is to inform the participants that the modeling team may be seeing something in the model that might be important but that a short modeling-timeout is required in order to introduce the participants to something they need to know to be able to see what the modeling team sees. Experienced modelers carry a plethora of generic structures (modules, archetypes) as mental models in the back of their heads. When listening to workshop participant's narratives, modelers constantly seek to find such modules (e.g. balancing and reinforcing feedback loops) that fit the participant's story. Similarly, the system structures modeled up to that point are also constantly compared to these archetypes (especially by the

content coach), seeking for congruence. When the facilitator as the second step introduces the participants to this module using a diagram, it is important to do this separately from the model structure developed so far, i.e. on a flip-chart a separate whiteboard or in case of working in the computer-projector mode, using a different window. This is important in order to respect model ownership by the participants and avoid boundary object failure by introducing structures from the modeling team directly into the participant's model without prior consent. The module should either be introduced in a very generic form directly, or if that is too challenging to understand, using an example first that is separate from the system that the group is currently modeling and then generalizing to arrive at the generic form. This is necessary so that participants still have room to develop their own concrete policies later on. It is often important that the introduction to the module explains what behavior this structure tends to produce and how this behavior results from its structure. As step 3, the facilitator then turns back to the boundary object model and asks participants, whether they see this module 'hiding' in the system diagram they have developed so far. When the participants find the open loop in their model and the facilitator draws it into the diagram of the group's model (step 4), the causal links that do not yet exist in the real system should be distinguished from existing causal links (e.g. dashed or using a different color).

The creativity that usually springs up when participants immediately start thinking of ways of implementing this generic loop in reality should be channeled using additional scripts such as *initial policy options*. This is most important for larger groups, where uncontrolled brainstorming is not advisable. A detailed description of the script in the standardized script form can be found in the appendix.

In order to make the use of the script easier to understand we describe its use in a GMB-workshop setting below. It should be noted though that the script as outlined above is an adaptation that contains some improvements as compared to the original prototype outlined below.

Experience

During a GMB-workshop the participants outline a situation where an institution regularly contracts an external companies to carry out some work (e.g. construction). A third institution is commissioned with controlling the work carried out by the contractors. The undesirable system behavior (reference mode) is insufficient controlling: some deficiencies do not get reported in time so that instead of the contractor fixing the deficiencies, the principle has to fix them at its own cost. The participant explains that the people carrying out the controlling have an interest of not reporting some of the deficiencies they found because it is a bureaucratic effort for them. This is especially the case for small deficiencies because they represent a relatively large bureaucratic effort for relatively low return. While listening to this story, the facilitator got the impression that the reason for undesirable system behavior could be seen as a lack of feedback from the controlling performance to the institution carrying out the controlling to improve the quality of controlling. The description led to a system diagram which was somewhat like variables and solid arrows depicted in Figure 3.

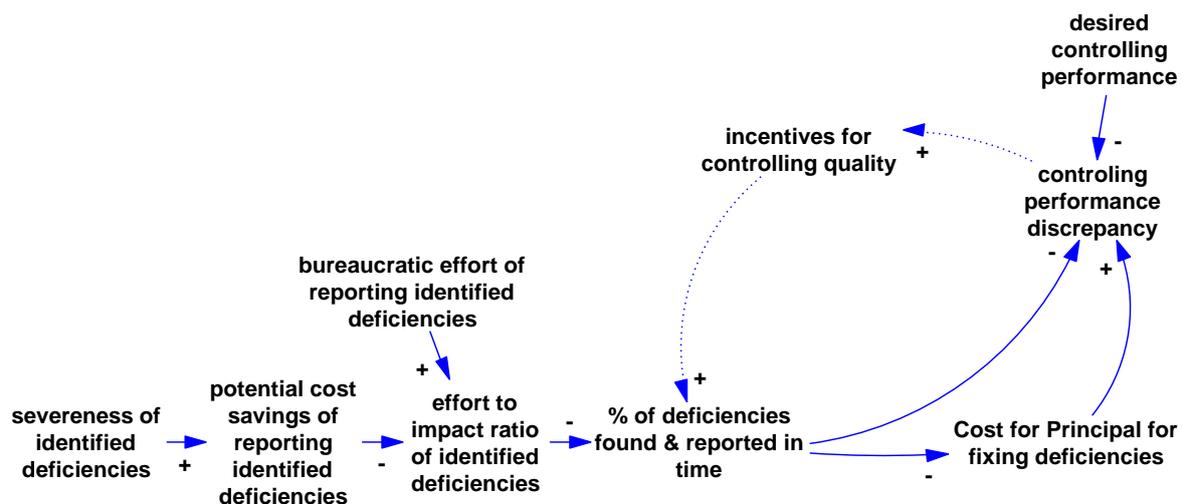


Figure 3: Causal loop diagram with feedback loops that are open in reality and need closure (dotted arrows) to improve system behavior

In order to validate his assumption on open feedback loops, the facilitator asked the participants if the return (cost savings) are experienced by the principle only and not by institution and the people carrying out the controlling. The participants agreed and noted that in fact the only incentive in place actually points into a direction that is undesirable from As perspective. The facilitator further asked the participants if there are any consequences of controlling quality on the people carrying out the controlling. As the participants declined, the facilitator drew the dashed closure of the feedback loop shown in Figure 3, which represents such consequences. Note that this loop has a very general form, and could stand for a number of potential policies (feedback loops). The participants were very exited about this new view and immediately came up with policy ideas, as to how this loop could be closed.

While the script was successful in the form that was developed ad-hoc during the workshop, this prototype is still suboptimal in the sense that the facilitator “gave away” too much of the insight instead of aiding the participants in finding it themselves. Firstly, this is suboptimal because it means that the facilitator has a stronger influence on the direction into which the model is developing than necessary. This bears the risk of loss of model-ownership by participants i.e. a segregation of the participants from the boundary object which is common failure mode for GMB (Hovmand 2013). Secondly, it is suboptimal because the workshops main goal was not to solve a specific problem but learning in terms of systems thinking (*learning problem* rather than an *analysis problem* see Hovmand 2013). With this learning goal in mind, it would have been especially desirable for participants to find the open feedback loop themselves.

The generic model structure that the facilitator suspected to be congruent with the problem at hand was a simple balancing feedback loop, a regulatory feedback loop as indicated in Figure 4. In its improved version, the skript would expect the faciliator to show and explain this module to the participants. Alternatively, the content coach could be invited by the facilitator to do this, especially if it was the content coach who suspected the structure in the first place. It is possible but not always necessary to start with a different example first (e.g. unemployment and (implicitly) desired unemployment defining an employment discrepancy that deterimes political pressurre to reduce unemployment). In any case this example diagram should lead to the relatively generic diagram in Figure 4. It should be explained that systems

that work well, regulate their performance in such a way and that sometimes such loops are not closed in systems and that this can result in undesirable system behavior. Some of the arrows or variables in the figure can be hidden to better illustrate that e.g. information is not transmitted. It would be important that the participants understand the behavior of the loop (regulating actual towards desired values) and how this results from its structure. The generic form of the diagram can thereafter be used to ask participants if they can find this module hiding in their model structure.

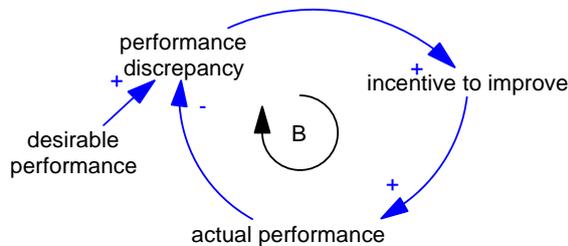


Figure 4: balancing feedback loop template

Note that the loop in Figure 4 is not the most general form (involving the word *performance*, and *incentive to improve*) to make it a bit easier for the participants to transfer the concept to the previously existing boundary object and the stories told by participants. For participants with more experience in GMB, this could be made more challenging by choosing a more generalized representation. It should not be so specific that it already represents a concrete policy but rather leave room for several policies that participants may come up with. In this case participants suggested e.g. that controlling performance could be evaluated by using key performance indicators as well as changes within the organization structures that would facilitate closing the loop. Especially with but not limited to larger groups it may be wise to channel the creative momentum that develops at the end of this script by succeeding it with the script *initial policy options* (Scriptapedia & Contributors n.d.) instead of letting the participants brain storm.

Summary and Conclusion

We have introduced two new GMB scripts:

The first script uses succinct online questionnaires to elicit basic information for building a seed model before the workshop. It involves the steps of setting up, sending around the link to the questionnaire, as well as its partially automated evaluation and the subsequent construction of the seed model. The script has shown to lead to very high response rates likely by reducing transaction costs for participants both in terms of time and ease of use. It has also shown to be efficient way of eliciting information for the modeling team.

The second script involves helping GMB-workshop participants find/see open feedback loops the lack of closure of which may be responsible for undesirable system behavior. It involves the steps of informing the participants of a modeling break to introduce something to them that will enable them seeing more in their own diagram, then introducing them to the loop in a generic form (possible using an example from a different context first), explaining its behavior and how it emerges from its structure as well as the difference of open and closed loops, and then asking participants if they see this module hiding in their model. Seeing the loop closed in its general form, unleashed creativity in participants to develop policy options.

Further research should test and evaluate the performance of the improvements that the scripts

contain compared to their original form. It will for example be interesting to see how well the modified version of the find-the-open-loop script performs in terms of participants finding open loop(s) themselves. Will they be able to think of feedback loops in such generalized form first and transfer the concept to the model structure developed so far or do they need an example from a concrete policy from a different setting first to understand the general version? Can this script be generalized to also find reinforcing feedback loops that are not closed or even larger generic modules?

The authors would be thankful for any ideas for further improvements and any other *feedback*.

Acknowledgement

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Appendix 1: Script Preliminary Online Questionnaire in Scriptapedia format

Context

Before the first GMB session

Purpose

The purpose of this script is to

- Helps the facilitator become more familiar with the topic.
- Enables building a seed model.
- Initialize rapport between participants and the modeling team.

Status

Under development

Primary nature of group task:

Divergent

Time

Preparation time: Approximately 150 minutes

Time required from each participant before first session: Two times 15 minutes.

Follow-up time: Approximately 150 minutes

Materials needed

- Contact information of all participants
- Computer and access to the internet
- Tool to set-up an electronic survey (e.g. Self-made Javascript page, Google Forms, etc.)

Inputs

- Preliminary problem definition
- Basic understanding of the problem context.

Outputs

- Consensus-check on the problem definition
- Preliminary model (seed model)
- Pool of variables collected from the participants

Roles

- Questionnaire builder and evaluator
- Contact person
- Modeler/content coach or facilitator for seed model construction

Steps

The script is organized in four main steps:

- a) Set-up of questionnaire
- b) Send around link to questionnaire
- c) Evaluate questionnaire
- d) Build seed model

Step 1: Set-up of questionnaire

The questionnaire consists of three main parts. The first part checks if there is consensus on the problem definition. The problem can be introduced with a graphs over time chart or with a short textual explanation. After the problem definition was given, a first question asks, if the participant approves to the problem definition. The participant has the possibility to give some additional remarks afterwards. Especially, if the participant does not agree, (s)he is able to air his/her thoughts.

Problem Definition

The problem is defined here by an explanation and/or a graph over time chart.

- Yes
- Partly
- No

Explanation

The next questions block focuses on the key variables in the context of the problem definition. An explanation is added, that such variables are things that may increase or decrease over time. The questionnaire asks to identify three key variables and to write them down each in a separate box.

What are the three main key variables in the context of the problem definition. (A key variable is something that may increase or decrease over time.)

Key variable 1

Key variable 2

Key variable 3

The final questions block focuses on influences that lead to worsening or improvement in regard to each key variable. Each participant is asked to name two factors leading to a worsening and two leading to improvement.

Which influence leads to a worsening in respect of key factor 1?

Factor 1

Factor 2

Which influence leads to a improvement in respect of key factor 1?

Factor 1

Factor 2

Step 2: Send link of the questionnaire around

After the questionnaire was set-up, the questionnaire can be send to all participants. Normally this is done via mail, but it is also possible to ask for this by phone. Regardless which way of communication is chosen, it is important to mention what the aim of the questionnaire is: the ability to build a preliminary model for the first session. Furthermore it is important to mention a deadline, until when the answers are needed. If participants have not given their answers until this deadline, a gentle reminder will ask them once again to give their answers.

Step 3: Evaluate questionnaire

After the participants have filled out the questionnaires, all the answers are assessed. For this purpose the answers are added all together to an excel sheet. The first thing is to check, whether there is consensus on the problem definition. If many of the participants have not partly or fully agreed on the problem definition, the facilitator can expect a high level of conflict in the first GMB session. If this is the case, the facilitator is exhorted to read all the comments carefully and to clarify this issue in the first session.

The second and third part of questions builds the basis for the building of the preliminary model. All key variables are added together and put into a rank order based on the number of mentions of the different participants. The same is done for the different influencing factors. Sometimes different phrases are used for the same thing, then the facilitator needs to decide which phrase is more suitable in terms of stock and flow terminology.

Step 4: Build of seed model

Based on the content from the questionnaires, an experienced SD modeler is able to build a seed model. The resulting model can also contain unconnected structures that will be first connected in the opening and future sessions. How often different factors where mentioned should be one criterion to decide whether to include or not to include factors in the seed model structure. Not included (key) factors are used as a bunch of variables and put beside the seed model in the first session as a pool of variables, as would be collected by a NGT script in the first session. To have such a pool of variables already before the first session starts saves time and enables to use more resources on discussion and improvement in the ongoing GMB workshop.

Evaluation Criteria

- Response rate of the participants
- Quality and quantity in respect of the answers
- Quality of the seed model

Authors

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History

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First described in

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Revisions

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Appendix 2: Script Find the Open Loop in Scriptapedia format

During GMB modelers may suspect that the undesirable behavior of a system is caused by a lack of feedback. Instead of simply telling the participants about this suspicion, the facilitator helps them find open loops themselves. This is especially meaningful if the GMB goals involve some degree of capacity building of participants in terms of systems thinking.

Status

Under development

Primary nature of group task:

Convergent

Time

~ 30 minutes: Excluding collecting policy options = subsequent script, with another 20-45 minutes

Materials needed

GMB-equipment either cling sheet whiteboard or computer & projector

Inputs

- Growing Group Model, e.g. from *Nominal Group Technique, Initiating and Elaborating a Causal Loop Diagram, Causal Mapping with Seed Structure*
- Facilitator or content coach starts seeing a feedback loop lacking closure in the real system as underlying cause of undesirable system behavior

Outputs

- Open feedback loops as causes for undesirable system behavior
- Excitement about new perspective, creativity unleashed for designing policy options based on the insight
- Next script initial policy options

Roles

- Facilitator
- Content coach
- Wall-builder

Steps

1. Facilitator or content coach suspects an open feedback loop in the real system as underlying cause of undesirable system behavior.
 - a. If it is the content coach, (s)he signals the facilitator and gives a piece of paper to the facilitator indicating an open feedback loop.
 - b. Facilitator decides to run the script or not
2. Facilitator informs participants that s/he may be seeing something that requires a short explanation (involving a time-out from the construction of the common model)
3. Facilitator introduces the generic structure (module) that the modeling team suspect

they discovered in the model, but in very generalized form. This could for example be a CLD of balancing loop with discrepancy of desired vs. actual state. If the module appears too difficult to understand in this generalized form, an example from a different setting should be used to introduce it and then generalize from there. The diagram should be shown in on a separate flipchart; separate window on the computer to make clear this is an input from the modeling team. The facilitator explains the behavior of this structure in real systems and how this behavior results from the structure (e.g. that balancing feedback loops regulate systems towards goals (explicit or implicit ones) and that sometimes a feedback loop that could regulate a system towards a desired end is not closed). Facilitator asks participants if they see this module (e.g. an open feedback loop) in their system. If participants do not understand this in the generic form, the facilitator could introduce an example of an open feedback loop (could be missing information feedback or missing incentive for a decision maker, who does not feel the consequences of his decisions). This has to be done with great care though choosing an example close to what the facilitator suspects bears the risk that the facilitator influences the model too much, choosing an example that is too far away is of little help to the participants (25')

4. Facilitator / computer operator adds loops that participants talk about to the model, (dashed). This should be done as general as possible to keep room for different policy options. (5')
5. Developing such policy ideas may happen spontaneously as participants find the open loop. Ideas should be collected by the wall-builder. In case of larger groups this energy can be channeled into "initial policy options"-script as spontaneous brainstorming may not very effective. (20-45')

Evaluation Criteria

- Workshop participants find the feedback loop themselves
- Workshop participants are excited about new possibilities resulting from the new view of the system (e.g. they develop policy options)

Authors

Max Kleemann

History

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First described in

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Revisions

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Notes

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