



















Exercise Format	Exercise Objective	Exercise Planning Logic	Exercise Participants	Exercise Focus (Level)	Exercise Focus (Content)	Size and Character of Event	Frequency of Exercises	Types of Development Efforts
Table Top Exercise	Train/educate	Scenario driven	Novice/Beginner (professional)	Strategic	Skills	Emergency (event within the framework of the participating organisations' mandate)	Single exercise	Develop the exercise methodology
Functional Exercise	Test/evaluate	Capability driven	Competent (professional)	Tactical	Methods, Plans and Procedures	Crisis (event outside the normal routines and processes of the participating organizations)	Repeated exercise (same exercise concept, same participants)	Increase the capability in the current crisis management system.
Full-scale (one actor, others are simulated)	Explore/develop		Skillful/Master (professional)	Operational	Concepts and Capabilities		Repeated exercise (same exercise concept, different participants)	Develop the crisis management system (within the current crisis management paradigm)
Full-scale (several actors)	Signal capability		Experts/academics	Multiple			Series of exercises, with gradually increased complexity	Transform the crisis management system (to something new, outside of today's paradigm).

Figure 4 The representation of a capability driven, full-scale exercise.

For this combination of values, the field indicates that the exercise's output is only useful for the development of exercise methodology and for the increase of capability in the current crisis management system. The reasons for

this are twofold. Single exercises cannot co-exist with neither the development within the current system, nor transformation of the crisis management system. Secondly, exercises with a capability driven planning logic cannot co-exist with transformation. In the Swedish context, the above characteristics are typical for the so-called SAMÖ-exercises, which are large scale, multi-agency inter-organizational exercises involving almost all sectors of the society. To use this type of expensive and complex exercise to try to find new ways of doing things is according to the model less productive unless the exercise is repeated or part of a series of exercises with gradually increased complexity.

## DISCUSSION

Organizations within the crisis management domain invest extensive resources in exercises. Furthermore, multiagency inter-organizational exercises are expensive but also one of few opportunities, apart from real crisis, for sectors, organizations, and individuals to meet and interact with each other on crisis management issues. Although the ability of exercises to bring actors together in itself represent an important objective, other important objectives are to train, test, explore, and to produce knowledge for the development of the crisis management system.

Given the rarity of real crises, exercises are one of few sources of knowledge about crisis and crisis management. If the purpose is to provide knowledge for the development of the crisis management system, exercises need to be designed to fit this purpose.

The objective of this article was to explore if a morphological field can be used to investigate the relationship between the characteristics of a specific exercise and the usability of its results in different types of development efforts. The objective was not to determine the optimal morphological field for this cause. Still, we believe that most of the dimensions in the field presented in this article would be included by most groups, such as the dimensions format, participants and objectives. The validity of the field is also implied by the evaluation, generating both expected results for certain combinations of exercise characteristics and results that were somewhat more surprising but still could be explained from the underlying pairwise relationships in the field.

However, the morphological field presented in this article is not the only possible one to describe the relationship between the exercise design and the development of the crisis management system. Other groups may choose other dimensions or values. As an illustration of the non-absolute character of the morphological field, the group of experts at a late stage realized that an additional dimension could have been included: *type of evaluation*. Type of evaluation would affect what types of results that are yielded and how these results can be used. Examples of values for this dimension are *evaluation of goals*, *evaluation of processes* and *evaluation of effects*.

The next step in the research should be to involve a group of highly experienced practitioners to further validate the field, as well as to refine and expand it. The resulting field could be used as a tool for choosing and designing exercises that generate results with a high applicability for specific development efforts within the crisis management system.

## CONCLUSIONS

This paper demonstrates that a morphological field can be used to investigate and understand the relationship between the exercise design and the usability of the exercise results in different types of development efforts. Even a quite simple morphological field offers results that deepen our understanding of this relationship. Further developed, we believe that a morphological field can be a powerful tool in designing exercises to fit the purpose of generating relevant knowledge for the development of the crisis management system.

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## REFERENCES

- Argyris, C. and Schön, D. A. (1996) *Organizational Learning II: Theory, Method and Practice*, Addison-Wesley, Reading (MA).
- Beerens, R. J. J. and Tehler, H. (2016) Scoping the Field of Disaster Exercise Evaluation – A Literature Overview and Analysis. *International Journal of Disaster Risk Reduction*, 19, 413-446.
- Berlin, J. M. and Carlström, E. D. (2015) *Collaboration Exercises: What Do They Contribute? – A Study of*

- Learning and Usefulness, *Journal of Contingencies and Crisis Management*, 1(23), 11-13.
- Boin, A. (2009) The New World of Crisis and Crisis Management: Implications for Policymaking and Research, *Review of Policy Research*, 26, 4, 367-377.
- Boin, A., Rhinard, M. and Ekengren, M. (2014) Managing Transboundary Crises: The Emergence of European Union Capacity, *Journal of Contingencies and Crisis Management*, 3, 22, 131-142.
- Borodzicz, E. and van Haperen, K. (2002) Individual and Group Learning in Crisis Simulations, *Journal of Contingencies and Crisis Management*, 3, 10, 139-148.
- Borrel, J. and Eriksson, K. (2013) Learning Effectiveness of Discussion-based Crisis Management Exercises, *International Journal of Disaster Risk Reduction*, 5, 28-37.
- Comfort, L. K. (2007) Crisis Management in Hindsight: Cognition, Communication, Coordination, and Control. *Public Administration Review*, 67, 189-197.
- Doyle, E. H., Paton, D. and Johnston, D. M. (2015) Enhancing Scientific Response in a Crisis: Evidence-based Approaches from Emergency Management in New Zealand, *Journal of Applied Volcanology*, 4, 1, 1-26.
- Dreyfus, H. and Dreyfus, S. (1986) Why Computers may Never Think Like People, *Technology Review*, 89, 375-390.
- Eriksson, P., Andersson, D., Hamann, K., Karapidis, A., Dworschak, B., van Rijk, R., van de Ven, J., Griffioen-Young, H., Stålheim, M., Szulejewski, M., Chagas, A., Rigaud, E., Rafalowski, C., Laist, I. and Joyanes, G. (2017) Lessons Learned Framework Concept, *DRIVER D530.1*, [<https://www.driver-project.eu/wp-content/uploads/2017/11/Lessons-Learned-Framework-Concept.pdf>]
- Kim, H. (2014) Learning from UK Disaster Exercises: Policy Implications for Effective Emergency Preparedness, *Disasters*, 38, 4, 846-857.
- Lagadec, P. (2009) A New Cosmology of Risks and Crises: Time for Radical Shift in Paradigm and Practice, *Review of Policy Research*, 26, 4, 473-486.
- MSB (Swedish Civil Contingencies Agency) (2016) Exercise Guidance Basic Manual – An Introduction to the Fundamentals of Exercise Planning, Stockholm.
- OECD (2015) The Changing Face of Strategic Crisis Management. OECD Reviews of Risk Management Policies, OECD Publishing, Paris.
- Peters, G. B., (2017) What is so Wicked about Wicked Problems? A Conceptual Analysis and a Research Program, *Policy and Society*, 36, 3, 385-396.
- Ritchey, T. (2006) Problem Structuring using Computer-aided Morphological Analysis, *Journal of the Operational Research Society*, 57, 792-801.
- Ritchey, T. (2011) Wicked Problems – Social Messes: Decision Support Modelling with Morphological Analysis, Springer-Verlag, Berlin Heidelberg.
- Sundelius, B., Stern, E. and Bynander, F. (1997) Krishantering på svenska – teori och praktik, Nerenius & Santérus, Stockholm.
- Tillberg L. V. and Tillberg P. (2013) Mission Commander: Swedish Experiences of Command in the Expeditionary Era, Svenskt militärhistoriskt biblioteks förlag, Stockholm:
- Wybo, J-L. (2004) Mastering Risk of Damage and Risks of Crisis: the Role of Organisational Learning, *International Journal of Emergency Management*, 2, 1-2, 22-34.