Analytical Concept

ENHANCED SYSTEMIC UNDERSTANDING

OF THE INFORMATION ENVIRONMENT

IN COMPLEX CRISIS MANAGEMENT

Coordinated Draft
Version 1.0

Bonn, 22 October 2010

Report Documentation Page

1. REPORT DATE **22 OCT 2010**	2. REPORT TYPE **N/A**	3. DATES COVERED **-**

4. TITLE AND SUBTITLE **Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management Analytical Concept, Version 1.0**	5a. CONTRACT NUMBER
	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Zentrum für Operative Information - Gruppe Informationsoperationen (Grp InfoOp) - Attn: LTC Fritz-Jörg Schäfer Robert-Schuman-Platz 3 D-53175 Bonn, Germany**	8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) **USJFCOM J9 Joint Concept Development and Experimentation, Suffolk, VA**	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release, distribution unlimited

13. SUPPLEMENTARY NOTES
Reproduction of this document and unlimited distribution of copies is authorised for personal and non-commercial use only, provided that all copies retain the author attribution as specified below. The use of this work for commercial purposes is prohibited; its translation into other languages and adaptation/modification requires prior written permission., The original document contains color images.

14. ABSTRACT
This document constitutes one of the products from multinational Concept Development and Experimentation (CD&E) within the Multinational Experiment (MNE) 6 theme 'The Irregular Challenge: A Comprehensive Approach to a Complex Problem'. The intent of the CD&E efforts leading to this document (MNE 6 Objective 2.2) was to develop a framework for analysis and assessment of the information environment in support of coalition actors involved in Strategic Communication to understand, engage and influence foreign and domestic audiences. The concept outlines an approach to a framework for the analysis and assessment of the information environment in support of Coalition engagements in a Comprehensive Approach context. The primary intent of this concept is to provide guidelines for analysing and assessing the information environment.

15. SUBJECT TERMS
multinational, experiment, MNE, information environment

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT **unclassified**	b. ABSTRACT **unclassified**	c. THIS PAGE **unclassified**	**SAR**	**205**	

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Points of Contact:

Zentrum für Operative Information
- Gruppe Informationsoperationen (Grp InfoOp) -
Attn: LTC Fritz-Jörg Schäfer
Robert-Schuman-Platz 3
D-53175 Bonn, Germany
Phone: +49 (0)228 43320-464
E-mail: fritzjoergschaefer@bundeswehr.org

IABG mbH – VG11
Attn: Mr Bernhard P. Schmidt
Einsteinstr. 20
D-85521 Ottobrunn, Germany
Phone: +49 (0)89 6088 2868
Email: schmidtb@iabg.de

Executive Summary

Context

This document constitutes one of the products from multinational Concept Development and Experimentation (CD&E) within the Multinational Experiment (MNE) 6 theme – 'The Irregular Challenge: A Comprehensive Approach to a Complex Problem'.

The intent of the CD&E efforts leading to this document (MNE 6 Objective 2.2) was to *'develop a framework for analysis and assessment of the information environment in support of coalition actors involved in Strategic Communication to understand, engage and influence foreign and domestic audiences.'*

Background

The starting point for concept development was a comprehensive baseline assessment of findings from recent and ongoing operations regarding the information environment as a vital factor of an operational environment and related deficits identified.

The general assessment is that we are not understanding and considering the information environment in today's operations as required and, as a consequence, we are not successful in pro-actively shaping the information environment in support of mission objectives to the required extent.

Relevant operational challenges are:

– a lack of comprehensive understanding of the information environment and related opportunities and challenges for shaping it

– the current practice to analyse and assess parts of the information environment from a functional point of view and focused on specific aspects while losing sight of the big picture

– an insufficient analysis of actors and audiences, reflecting their perspectives rather than ours and considering cultural differences and specifics

– missing adequate processes, methods, and tools to analyse, describe, and visualise the situation in the information environment and feed associated findings into operational processes

Proposed Solution

The concept outlines an approach to a framework for the analysis and assessment of the information environment in support of Coalition engagements in a Comprehensive Approach context.

The primary intent of this concept is to provide guidelines for analysing and assessing the information environment. It is not focused on a specific area of activity (e.g., politics, military, economy, development, security) or level of involvement. It is also not – and can not be by nature – focused on a specific situational environment or scenario. It can, however, serve as a reference to inform any actor potentially

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

involved in multinational crisis management and the security sector about the significance and characteristics of the information environment.

The framework is based on a set of models describing the information environment as a system to act in and shape in support of crisis management goals, and integrates perspectives from various sciences and application areas.

Key findings

- The information environment is a highly-dynamic environment we permanently act in and depend on.
- The information environment is continuously affected by all actors through their behaviour in terms of words and deeds.
- Successful crisis management requires own actors to shape the information environment pro-actively in a concerted manner.
- A comprehensive understanding of the situation in the information environment is a key pre-requisite for mission success.
- The situation in the information environment must be adequately considered throughout analysis, planning, execution, and assessment processes.
- Structured analysis and assessments are vital for understanding the information environment and, as a consequence, the ability to effectively plan and act.
- An analysis and assessment framework can provide guidance for comprehensive and systemic analysis and assessment of the information environment.
- An adequate interface between analysts applying the framework and the recipients of analytical support (advisors, planners, and operators etc.) is a key to success.
- The model framework can be used as an 'instrument of dialogue' among analysts and their customers.
- The model framework provides a 'toolbox' reflecting relevant sciences and theories. It is a starting point for a 'living toolbox' that should grow up based on best practices and lessons learned from operations and additional approaches from related fields of application
- The model framework can help to place and combine existing analysis capabilities in a context and to identify requirements for additional capabilities.
- The contents of the concept can be used to refine other analysis approaches such as NATO Knowledge Development with regard to information environment aspect (the last "I" in the PMESII construct).

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Table of Contents

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Table of Figures

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

1 Introduction

1.1 Purpose and Intended Customers of the Concept

This concept is primarily intended to provide guidelines for analysing and assessing the information environment. It is not focused on a specific area of activity (e.g., politics, military, economy, development or security) or level of involvement.

Potential users include but are not limited to the following:

- analysts and personnel with monitoring & evaluation/assessment functions;
- planners and practitioners with functions related to shaping the information environment.

In addition, it can serve as a reference to inform actors involved in multinational crisis management and the security sector[1] about the significance and characteristics of the information environment.

Customers to be informed may include but are not limited to the following:[2]

- governmental decision-makers and their staffs;
- decision-makers and their staffs of mandating and executing international organisations (such as UN, OSCE);
- civil and military key leaders in crisis response missions/operations.

1.2 Context and Scope of the Concept

This document constitutes one of the products from multinational Concept Development and Experimentation (CD&E) within the Multinational Experiment (MNE) 6 theme – *'The Irregular Challenge: A Comprehensive Approach to a Complex Problem'*.[3]

The overall context is described by the MNE 6 Problem Statement:

> *'To establish and ensure a safe and secure environment, coalition[4] forces require the ability to share information, gain situational understanding, synchronize efforts and assess progress in concert with interagency partners, international organizations, and other stakeholders when countering activities of irregular adversaries and other non-compliant actors.'*

---

[1] The 'security sector' encompasses state institutions which have a formal mandate to ensure the safety of the state and its citizens against acts of violence and coercion (e.g. armed forces, police, the intelligence and similar bodies), and the elected and/or duly appointed civil authorities responsible for control and oversight of these institutions (e.g., Parliament, the Executive, including the defence ministry, judicial and penal systems). [MNE6 FC 2010]

[2] In order to appropriately address these customers with the ideas outlined by this concept the respective material should be tailored to the respective addressee/audience.

[3] See [MNE6 CDD 2009.]

[4] In the context of MNE 6, a 'coalition' is understood as an ad hoc or temporary grouping of nations and/or organisations united for a specific purpose / in a common cause. [MNE6 FC 2010]

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

MNE 6 is a continuation of multinational CD&E on the comprehensive approach[5] to crisis management as promoted by the preceding MNE 5 campaign[6]. MNE 6 seeks to investigate practical applications of a comprehensive approach where the military assumes an important role amongst other actors.

The MNE 6 Outcome 2 provides a more specific view on the context for a proposed solution in the information environment:

> *'Coalition forces, interagency and relevant partners possess an improved ability to collaboratively develop and implement a shared information strategy (regional or transnational) during employment of direct and indirect approaches to countering irregular threats and the activities of non-compliant actors.'*

The intent of the CD&E efforts leading to this document (MNE 6 Objective 2.2) is:

> *'Develop a framework for analysis and assessment of the information environment in support of coalition actors involved in Strategic Communication to understand, engage and influence foreign and domestic audiences.'*

Within the MNE 6 framework the Objective 2.2 efforts are conducted under Outcome 2 on Strategic Communication / integrated communication.[7] However, the developed results are intended to benefit all application areas and functions with a focus on understanding and shaping the information environment for crisis management purposes.[8]

This concept incorporates and enhances insights gained from multinational CD&E within the framework of the MNE series and the Multinational Information Operations Experiment (MNIOE) project over the past years. It draws from the MNE 5 concept 'Development of a Multinational Information Strategy'[9]. Furthermore, it capitalises on findings and approaches from the MNIOE concepts[10] on a new multinational

---

[5] The 'comprehensive approach' encompasses the wide scope of actions in international crisis management, undertaken in a coordinated and collaborative manner with the affected nation(s). Co-ordination and collaboration includes national civilian government agencies and their defence and security forces, international and intergovernmental organisations, non-governmental organisations and the private sector to achieve greater harmonisation in the analysis, planning, management, and evaluation of actions required to prevent, ameliorate, mitigate and/or resolve the conditions precipitating a crisis. Based on [USJFCOM 2007]

[6] MNE 5 Pre-Concept Development Conference: June 2006 – MNE 5 Compendium of Solutions: March 2009.

[7] At the beginning of the campaign the Outcome 2 and Objective 2.1 theme was 'Strategic Communication'. However, over the course of the campaign it was doubted whether a new approach and definition of 'Strategic Communication' really is required. Consequently, a reorientation of Objective 2.1 on 'integrated communication' was suggested. [MNE6 FC 2010]

[8] The integrated communication approach assumes that a comprehensive understanding of the information environment is a key pre-requisite for effective communication (see model '3 Layers / 3 Pillars' of Integrated Communication' at [MNE6 FC 2010]).

[9] An 'Information Strategy' is the interagency and multinational approach to crisis/conflict prevention and resolution in the information environment. It constitutes mission-specific strategic and political guidance for information activities across all levers of power in support of mission objectives. [MNE FC 2010]

[10] See [MNIOE 2009a] and [MNIOE 2009b].

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

understanding of the military Information Operations (Info Ops) function[11] within the context of a comprehensive approach.

This concept outlines an approach for the analysis and assessment of the information environment in support of coalition engagements and decision-making in a comprehensive approach context. The approach follows an understanding of the information environment as a system[12] to act in and shape in support of crisis management goals. It builds on a framework of information environment models integrating perspectives from various sciences and application areas.

The focus of this approach is on (a) a more structured and comprehensive analysis and assessment of the information environment, and (b) improving the interface between analysis and assessment of the information environment on one hand and the advice function on information environment related aspects on the other hand.

As a consequence, relevant aspects of the information environment should be better integrated in coalition processes.

---

[11] Info Ops is defined as 'a military function to provide advice and co-ordination regarding activities affecting information and information systems – including system behaviour and capabilities – in order to create desired effects'. [MNIOE 2009b]

[12] A system consists of independent but interrelated components/elements constituting a coherent entity/unified whole. A system may again consist of systems, called 'subsystems'. 'System elements' are considered subsystems not further decomposed for the purpose of analysis. Thus, the designation of a system as a system, subsystem, or system element depends on the analytical viewpoint and level of aggregation. [Based on MNIOE 2007]

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

2 Fundamentals

2.1 Defining the Information Environment

> Definition: The information environment is the virtual and physical space, in which information is received, processed and conveyed. It consists of the information itself and information systems.

In the information sciences information is an assembly of data in any medium or form capable of communication and use by assigned meaning through known conventions used in symbolic representation.[13] In a broader sense information denotes knowledge communicated concerning some particular fact, subject or event.[14]

> Definition: Information systems are socio-technical systems[15] for the collection, processing and dissemination of information. They comprise personnel, technical components, organisational structures, and processes that create, collect, perceive, analyse, assess, structure, manipulate, store, retrieve, display, share, transmit and disseminate information.

General characteristics of the information environment include:[16]

- The nature of information is global, overarching and multi-faceted in the sense that it cannot be controlled by anyone once in the public domain.
- Despite state-controlled technical and procedural systems to deny access and limit consumption of information to an audience, it is extremely difficult to restrict the worldwide flow of information for an extended period of time.
- Modern information systems comprise an emerging and diverse infrastructure, posing increased challenge to standardisation and interoperability.
- Modern information systems are also subject to rapid technical development, forcing agencies to respond and constantly adapt their capabilities.
- In principle, the means to affect information and/or information systems are available to everybody at low cost.
- The complex interconnectivity of modern information systems makes it increasingly difficult to differentiate between intended and unintended effects, and places the security of own information at risk.
- Modern information systems can be affected anonymously, making it difficult to identify the originators and determine their intent.

---

[13] Based on [USJFCOM 2006].

[14] Based on [MWOD 2010].

[15] A 'socio-technical system' is an organised set of human beings and technologies, structured in a manner to produce specific output. It is composed of social and technical components (sub systems). The sub systems are inseparable and interact based on various dependencies. Due to the social components the behaviour of a 'socio-technical system' is not deterministic. Derived from [Ropohl 1999], [Sydow 1995], and [Trist/Bamforth 1951]. In the context of this concept the term information system is not used in any technically associated way.

[16] Based on [MNIOE 2009a] and [MNE6 FC 2010].

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

– Compliance with legal norms – if such exist at all – is difficult to enforce on modern information systems.

– The complexity and dynamics of modern information systems – sometimes called 'information overflow' – challenges focused retrieval, reliability and timeliness of information.

2.2 Information Activities

Definition: Information activities[17] are actions designed to have an effect in the information environment, performed by any actor.

Information activities comprise the whole scope of actions and operations conducted to impact the information environment. They include direct and indirect communication, kinetic and non-kinetic actions, and protective measures.

Information activities will most often be employed in conjunction with other activities to ideally form a synergetic whole across all activity. These efforts must be closely coordinated in order to enhance their effectiveness and portray a consistent image of the actors in multinational crisis management.

Resources to conduct information activities can be as varied and extensive as the complexity of the information environment. The scope and scale of possible information activities covers a multitude of actions to create effects on understanding, will and capabilities, including human as well as technical system elements.

2.3 Crisis Management and the Information Environment

The situation in the information environment is crucial from the beginning and throughout all phases of crisis management. The situation in the information environment can reinforce or hamper desired developments inside and outside a crisis area in many ways. Transforming a given status of a crisis area into a different status will very often require specific conditions in the information environment to occur. Successful crisis management requires own actors to shape the information environment pro-actively in a concerted manner, i.e. the tailored creation of desired outcomes[18] and mitigation of undesired outcomes, e.g. through coherent words and deeds.[19]

The information environment is a highly-dynamic environment we permanently act in and depend on. It is a complex network of humans (and related characteristics and processes such as communication, sensation, interpretation, perception, opinion-building, decision-making) and technologies (such as technical means and media for accessing, processing, and distributing information). The information environment has no (local and regional) geographic boundaries. Rather, it pervades and goes

---

[17] Based on [MNE6 FC 2010].

[18] 'Outcomes' are the intended or achieved short-term and medium-term effects of an intervention's outputs, usually requiring the collective effort of partners. Outcomes represent changes in environmental conditions which occur between the completion of outputs and the achievement of strategic objectives. [DCDC CIP/CIME 2008]

[19] 'Coherence' is understood as 'the harmony of parts to one another as a whole (synonyms: consistency, correspondence)'. On the coherence of words and deeds see [MNE6 FC 2010].

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

beyond a crisis region or an operational environment. It affects all aspects of crisis management and is not a self-contained area of activity. The situation in the information environment can change rapidly (e.g., tactical incidents with strategic consequences), whereas specific changes will require longer time (e.g., regarding the reputation of and/or trust in a coalition).

The information environment is continuously affected by all actors through their behaviour in terms of words and deeds – 'one cannot not communicate'[20], i.e., every action that is perceived by others sends a message. Perception is driven by interpretation and assessment, based on individual experience, education, and knowledge – perception becomes reality through cognitive filters.

2.4 The Challenge of Understanding the Information Environment

Understanding the operational environment is the most essential prerequisite for crisis management. The relevance of the information dimension of the operational environment has been substantially expanding / widening. The challenge for coalition actors is to adequately understand the information environment and related opportunities and risks in the context of an operation.

As a consequence, the information environment must be adequately considered in a comprehensive manner throughout all coalition processes. 'Comprehensive' here means: covering all relevant aspects of the information environment and considering and serving the broad spectrum of coalition instruments and areas of activity.[21] Timely, continuous, and structured analysis and assessments are vital for improving the understanding of the information environment and, as a consequence, the ability to effectively plan and act.

---

[20] [Watzlawick 1967].

[21] 'Areas of activity' denote the national or organisational means to enforce political will or exert influence on others. Broad categories of actions taken to influence a crisis environment include politics/diplomacy, economy, information and security services (civil and military), as well as cultural/developmental activities, humanitarian assistance, and civil administration support. (Also referred to as 'Instruments of Power'). Based on [MNIOE 2009b]

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

3 Baseline Assessment

The baseline assessment[22] underlying the efforts of this concept identifies a variety of real-world deficits. It is based on a comprehensive literature research, the review of lessons identified/learned, reports on recent crisis engagements, and the involvement of experts. The identified deficits form the starting point for the derivation of concept development requirements, i.e. issues the conceptual solutions should address.[23]

The baseline assessment can be summarised by the statement that today's coalition engagements neither consider nor exploit the importance and potential of the information environment to the required extent.

3.1 Deficit Statements

– Coalitions lack a comprehensive understanding of the information environment and related opportunities and challenges for shaping it.

– Coalitions lack a common strategic assessment of the information environment, informed by related national assessments from the earliest stage.

– Coalition actors analyse and assess parts of the information environment from their functional point of view and focus on specific aspects while losing sight of the big picture. Associated analysis findings and assessments are not expediently shared among coalition actors.

– Coalition actors do not sufficiently understand and consider the dynamics of the information environment. The impact of own and other actors' activities on the information environment and timelines for achieving specific outcomes are poorly understood and consistently not appropriately regarded.

– Coalition analysis of actors and audiences is not comprehensive enough, and cultural differences and specifics are not sufficiently addressed. Relevant (local, regional, and global) actors and audiences are not analysed to the required extent or even disregarded. Furthermore Coalitions tend to analyse and assess from their (often westernised) point of view, rather than from other actors' perspectives and perceptions.

– Coalition analysis of the information environment does not adequately consider basic and state-of-the-art knowledge about human cognitive, social, and communication-related processes.

– Current (civil and military) monitoring and evaluating approaches in crisis engagements lack relevant metrics and indicators for assessing the situation and changes in the information environment in a comprehensive manner.

---

[22] See Annex A for the list of Outcome 2 baseline assessment statements. The complete baseline assessment for the MNE6 campaign is provided with the USJFCOM Baseline Assessment Report [MNE6 BA 2008].

[23] In the MNE6 context, these concept requirements are called 'study issues' (see Annex B for Objective 2.2 study issues).

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

– Traditional information gathering processes do not sufficiently cover relevant aspects for supporting a comprehensive analysis and assessment of the information environment.

– Coalitions lack adequate processes, methods and tools to analyse, describe and visualise the situation in the information environment and feed associated findings into the coalition processes. A lack of dialogue between operators and analysts adds to this deficiency as analysis is frequently not initiated by the appropriate questions.

3.2 Concept Development Requirements

The overarching requirement is to better understand and shape the information environment. This includes improvements in

– understanding and assessing the situation in the information environment and sharing related assessments among relevant actors;

– estimating what conditions in the information environment should be created in support of mission goals and how these changes may be achieved;

– anticipating how the information environment may respond to specific activities.

The conceptual requirements can be categorised thematically:

The analytical point of view: What needs to be better analysed / understood?

The information environment needs to be analysed as a whole, in its context, and covering all relevant parts, rather than in a fragmentary, 'stove-piped' manner or from selective functional points of view.

The dynamic behaviour of the information environment needs to be better understood. This behaviour is based on the underlying structures and the dynamics of the information environment determined by the involved actors and systems as well as related processes based on their interactions and interdependencies.

Human actors are the crucial element as their behaviour determines the situation in the information environment. Relevant factors substantially generating their behaviour need to be analysed from the perspective of the analysed actors.

The interaction among actors and with systems in the information environment is essentially formed by information and communication processes. These processes need to be explored from basic elements to complex emergence.

Information and knowledge utilisation: What input to analysis and assessment processes needs to be generated / better used?

The information environment is a complex network of human and technical components. Thus, a broad range of human and technical characteristics and processes becomes relevant. No single science or academic field of knowledge exists which comprehensively covers all aspects of this broad spectrum. A variety of relevant theories, areas of expertise, and application areas should be considered.

Relevant basic and 'state-of-the-art' knowledge, especially on human processes, available from various areas of expertise needs to be considered to the required extent.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

<u>Approaches, models, and tools utilisation: What approaches, models, and tools should be used / developed?</u>

The description and assessment of the situation in the information environment on one hand and the analysis of underlying structures and dynamics on the other hand call for respective approaches, models and tools.

Analysis and assessment results regarding the situation in the information environment and related conclusions and recommendations should be communicable, visualisable, and sharable. Respective models and tools should support this requirement.

An applicable assessment (monitoring and evaluation) approach should include an appropriate set of indicators and related metrics specifically focused on relevant aspects of the information environment.

<u>Process design: How should analysis and assessment processes be designed?</u>

Analysis and assessment are closely interconnected with and support other processes such as planning and execution, and coordination among actors. The interplay of analysis and other processes should meet the support requirements, facilitate appropriate initiation and guidance for analyses and assessments, and enable an adequate incorporation of respective results in supported processes. To this end, especially a close dialogue between analysts of the information environment and advisors on information environment related issues should be established.

The analysis and assessment processes should be initiated and triggered by relevant information environment related questions and need to be open for incorporating required information, knowledge, and expertise. Related information and knowledge gathering processes should reflect the analytical requirements.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

4 Approach and Proposed Solution

The main idea of this concept is to provide a framework for the analysis and assessment of the information environment. This concept is based on results-based thinking (also referred to as outcome-oriented or effects-based thinking[24]) and the systemic approach.

4.1 Results-based Management

Results-based management is a management strategy or approach by which an organization ensures that its processes, products and services contribute to the achievement of clearly stated results. Results-based management provides a coherent framework for strategic planning and management by improving learning and accountability. It is also a broad management strategy aimed at achieving important changes in the way agencies operate, with improving performance and achieving results as the central orientation, by defining realistic objectives[25] in terms of results, monitoring progress toward the achievement of expected results, integrating lessons learned into management decisions and reporting on effectiveness and performance.[26]

One of the basic tenets of results-based thinking is the need to gain a systemic understanding of the operational environment. In like manner, shaping the information environment in support of mission goals requires a comprehensive and systemic understanding of the information environment and its characteristics.

4.2 Systemic Approach

The systemic approach applies an analytical methodology (systemic analysis or systems analysis[27]) that comprehensively regards the operational environment as a system of complex adaptive[28] socio-technical systems. Examining the operational

---

[24] The Effects-Based Approach to Operations (EBAO) was the common theme of MNE4. MNE5, focused on the 'comprehensive approach', capitalised on the underlying philosophy of effects-based thinking.

[25] An 'objective' is a clearly defined and attainable goal in the operational environment that is essential to military commanders' plans and towards which the operation is directed. 'Objectives' are achieved by the outcome of an aggregation of intended effects and are derived from the end state. Their completion should lead to the achievement of the end state. [MNE6 FC 2010]

[26] [UNDP 2002].

[27] Systems Analysis is a method which defines a network of elements, their relations and interactions, evolving in space and time, and thus allows a valid contextual assessment of objectives, sequences of effects and chains of actions. The result of Systems Analysis is a comprehensive modelling of the operational environment with its system dynamics and feedback loops. Systems Analysis provides a description of effects and exposes both intended and unintended consequences. [DEU KD 2007]

[28] A complex adaptive system is a dynamic network of many agents (which may represent cells, species, individuals, firms, nations) acting in parallel, constantly acting and reacting to what the other agents are doing. The control of a complex adaptive system tends to be highly dispersed and decentralized. If there is to be any coherent behavior in the system, it has to arise from competition and cooperation among the agents themselves. The overall behavior of the system is

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

environment as a system with various interdependencies and interactions between its (sub-)systems and system elements helps to better understand the dynamic behaviour of the system, assess system strengths and weaknesses, and exploit or protect related vulnerabilities.

Systemic analysis helps to deal with the complexity of the operational environment and promotes comprehensive situational awareness and situational understanding. These in turn, facilitate the identification of relevant knowledge gaps and related information and analysis requirements. Attaining comprehensive understanding is essential for successfully shaping the information environment as it is a pre-requisite for identifying opportunities, challenges and risks associated with the information factor.[29]

4.3 Proposed Analysis and Assessment Framework

The proposed framework is built around a set of generic models of the information environment. It integrates various perspectives from relevant sciences and application areas.

The framework is adaptable to specific applications depending on scenario, mission and situation, and related analysis requirements. Adaptation to requirements will be made by selection of and focussing on relevant parts and aspects of the information environment and related models as well as by specifying the suitable level of detail. Substantiation and configuration of selected generic models will be done through instantiation and assignment of values to attributes and relations based on available data / information and/or related assumptions. Selection, substantiation, and configuration of models have to be done by assigned analysts in close dialogue with advisors on information environment related aspects as the primary customers of analysis results.

The framework comprises:

- a description of the context and an overview of the underlying theories;
- a structural description (parts of the 'system information environment' in various levels of detail) reflecting a static model;
- a description of the set of generic models ('tool box') – from various perspectives and independent from specific tools;
- generic (static and dynamic) models (e.g., system dynamics stock & flow diagrams, influence diagrams) covering specific elements of the information environment;
- approaches for visual representations of the model (based on the static and dynamic models);
- guidelines on how to use the framework and the set of generic models for analysing and assessing the information environment in support of a coalition engagement.

---

the result of a huge number of decisions made every moment by many individual agents. [Holland 1994]

[29] The actuality of information pervading societies, such as actors and audiences have become increasingly indistinguishable, and every action sends a message, intended or not.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

4.4 Conceptual Hypotheses

The following hypotheses depict the assumptions underlying the approach outlined by this concept.

- *IF* we apply an analysis and assessment framework based on a generic conceptual approach and model of the information environment, *THEN*
  - o relevant aspects of the information environment – including its dynamics – that are inadvertently omitted today will be incorporated in the analysis and assessment;
  - o analysis and assessment of the information environment in any given situation should be more comprehensive, consistent, and accurate;
  - o continuous monitoring and evaluation of impact and progress in the information environment can be significantly improved, and thus, enable better adjustment of plans and activities.
- *IF* the analysis and assessment of the information environment is comprehensive, consistent and accurate, *THEN*
  - o awareness and understanding of the situation in the information environment will be improved;
  - o planning will benefit from better identification of opportunities, risks, and vulnerabilities associated with the information environment;
  - o management / execution of crisis activities will have a better chance of achieving the desired outcomes.
- *IF* a generic conceptual model of the information environment is available, *THEN* scenario-based exercises and experiments can be enriched.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

5 Analysis and Assessment Requirements

5.1 Analysis and Assessment as Core Processes

Any civil or military 'command and control' approach can be described by a generic model encompassing processes of analysis, planning, execution, and assessment. These mutually complementing processes are interconnected by feedback loops, and proceed iteratively and in parallel. Each process is characterised by input and output relations, specific activities, and performing actors in their specific roles.
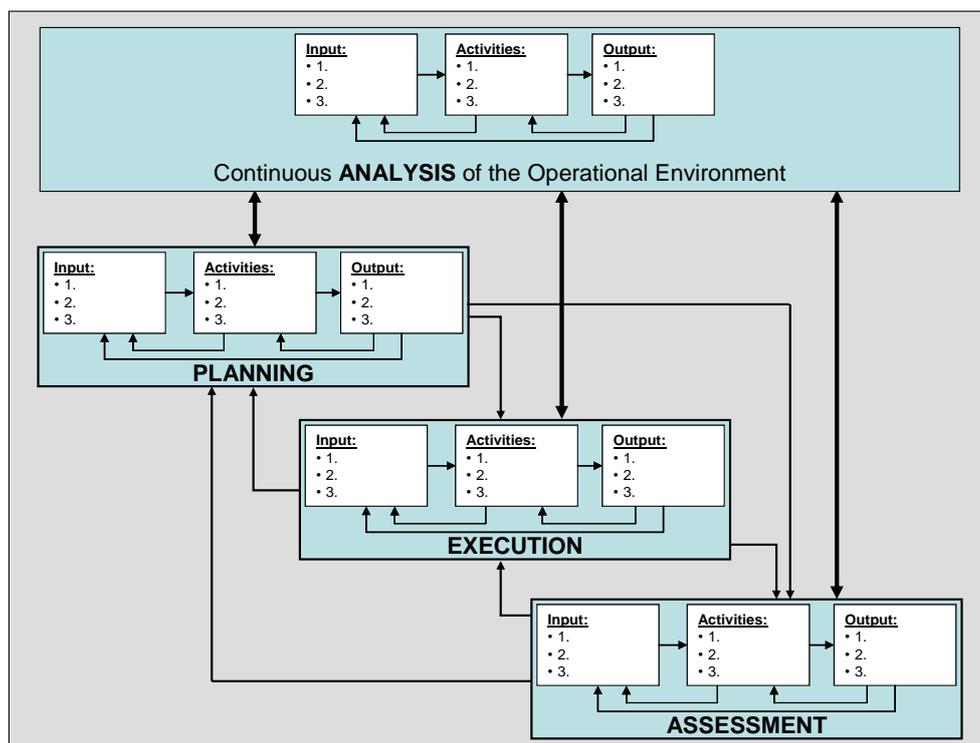
Figure 1: Generic Process Model[30]

Coalitions require adequate and continuous analysis and assessment before, throughout, and after a crisis engagement. Different scenarios and engagement types as well as missions and inherent phases may have specific analysis and assessment requirements. However, one aspect will be common: adequate analysis and assessment of the crisis and the related environment should include an appropriate consideration of the information environment.

The terms 'analysis' and 'assessment' are used in various ways in different contexts. This concept uses and understands these terms as follows:[31]

---

[30] Adopted from [MNIOE 2009b].

[31] Based on [DCDC JDP01] and [DCDC JDP 5-00].

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

> **Analysis** is a continuous process to develop and maintain situational understanding by framing the problem space under consideration. Analysis is understood as a detailed examination of all the constituent elements of a situation, and their inter-relationships, in order to obtain a thorough understanding of the past, present and anticipated operational context. This should include both the overt symptoms and underlying causes of the situation.

Analysis should be comprehensive and detailed, but focused on interpretation and understanding rather than the disaggregation of a problem as an end in itself. Analysis examines a situation in its entirety, as an inter-dependent and dynamic system, recognising that individual elements seldom exist in isolation or in perfect equilibrium.

The results of analysis are never exhaustive, or absolutely certain, for the dynamics are too complex and volatile. The process is instead a continuous one to gain, and then maintain and enhance, contextual knowledge of the circumstances, actors, surroundings and influences that characterise a particular crisis.

The results of analysis include models of complex systems as an aid to comprehension, not as a means to conduct operations. The results of analysis should be shared appropriately through the dissemination of respective products.

> **Assessment** is the evaluation of progress through auditable judgements, based on levels of subjective and objective measurement, in order to inform and support decision-making. The assessment of progress is a fundamental review and feedback function and enables evaluation and re-orientation. The assessment process indicates potential impact of planned activities in the future, contributing to maximise positive (and minimise negative) effects, and avoid unintended, undesirable consequences.

Assessment results are used to update analysis together with a range of other information sources. It is the combination of continuous analysis and assessment which reveal changes in the operational environment that have occurred.

The primary purpose of assessment is to support decision-making by providing the necessary recommendations on how to adapt a plan, based on feedback regarding its implementation. Assessment in coalition campaigns is not only to appraise whether the coalition is achieving its planned objectives. It is also to assess the appropriateness of the coalition's plans with regard to the evolving situation and the assumptions underlying the plans. Coalition responses should fit to relevant changes in the operational environment. Such changes need to be detected and interpreted, and the logic behind these changes needs to be understood.[32]

Assessments can also be a catalyst of a comprehensive approach to solving the crisis, by fostering collective understanding of the problem and by stimulating potential synergies among stakeholders. Indeed sharing of assessments among actors can encourage dialogue and build trust.[33]

---

[32]   Based on [MNE6 GAP 2010].

[33]   See [MNE6 GAP 2010].

5.2 Strategic Baseline Assessment

If the anticipated development of a given situation is assessed by relevant actors as not acceptable, the International Community may decide to act and mandate a coalition formed by partners willing to take action and contribute to the resolution of the crisis.

At the political strategic level a significant starting point in the crisis management process is a description and assessment of the current situation (given status = baseline) that promotes shared understanding across stakeholders.

The crisis analysis process involves consideration of the broad strategic context in order to provide the backdrop for a more in-depth examination of the problem. The analysis process begins to indicate (based on existing unfavourable conditions) what might represent a more favourable situation in the future (desired status).

At the beginning of a coalition engagement one result of crisis analysis should be a common strategic baseline assessment of the crisis as it forms a pre-requisite for coordinated, coherent and concerted coalition activity. This common assessment should evolve from the consolidation of national strategic analyses including relevant aspects of the information environment. It should serve as a mandatory benchmark and baseline for the planning and conduct of coalition operations, including information activities, as well as for continuous assessment of progress.

A coalition strategic baseline assessment might include:

- an assessment of the situation in the operating environment (evolution and related symptoms and causes);

- a discussion and estimation of potential developments without external intervention, identifying those elements of the situation that are not acceptable from the coalition's perspective (i.e., the characteristics and consequences of the crisis or conflict, which provides the rationale for the coalition engagement);

- a description of issues that characterise the crisis and issues of concern for relevant actors as well as their cultural background, motives and needs;

- a description of the system dynamics of the crisis, as appropriate to the level of consideration;

- the identification of starting-points for the initiation of change through coalition intervention.

Analysis of the information environment should be conducted as an integral part of the national analyses and the coalition strategic assessment of the crisis, and be continued throughout the campaign. It should be advised by national experts and relevant multinational representatives.

A common baseline of the situation in the information environment will promote situational awareness and understanding. It should be detailed at each level of involvement and serve as a basis for coalition activity, e.g. for developing political-strategic guidance regarding conditions to be created in the information environment, for the planning and implementation of coherent activities shaping the information environment in support of mission goals, and for assessing progress towards mission objectives in the information environment.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

5.3 Assessment of Progress

Throughout operations, assessing progress towards coalition goals should be done continuously at all levels and should result in input to the respective processes for adjusting coalition plans and actions. These assessments will be based on a combination of qualitative and quantitative measurements depending on the level of involvement, depth of situational understanding, coalition objectives, an applicable set of indicators and metrics, and the availability of and access to required data and information.

Assessing the campaign's progress ultimately amounts to wholly assessing the engagement, i.e.:

– gauging the transformation of the operational environment, based on observable evidence,

– estimating to what extent the performance of the coalition has contributed to shaping the operational environment,

– comparing the observed situation with the desired results set forth in the operational / campaign design,

– verifying the validity of the plan's underlying hypotheses,

– anticipating future trends, as a result of the ability of the coalition to perform prescribed tasks and the appropriateness of those tasks to produce the intended influence on the conflict dynamics,

in order to decide on short-, mid- and long-term desirable adjustments on coalition plans and strategies.[34]

Broad categories of assessing progress (towards own plans) are:[35]

– <u>Assessment of Activity</u> is related to an activity or task and the achievement of its associated purposes: Have planned activities been carried out successfully?

– <u>Assessment of Effectiveness</u> relates to the realisation of specified effects (also referred to as outcomes): Have planned activities, carried out successfully, been effective?

– <u>Campaign Effectiveness Assessment</u> is the evaluation of campaign progress: Do the effects / outcomes of planned and successfully executed activities, and the conditions thereby created, indicate progress towards the achievement of campaign objectives and, hence, the mission goals?

Assessment of progress towards mission goals is linked to the coalition objectives, i.e., the actual situation (intermediate state) is assessed against the baseline (starting state) on one hand and the objectives (desired state) on the other (see figure below).

---

[34]   Based on [MNE6 GAP 2010].

[35]   Based on [DCDC JDP01] and [DCDC JDP 5-00].

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010
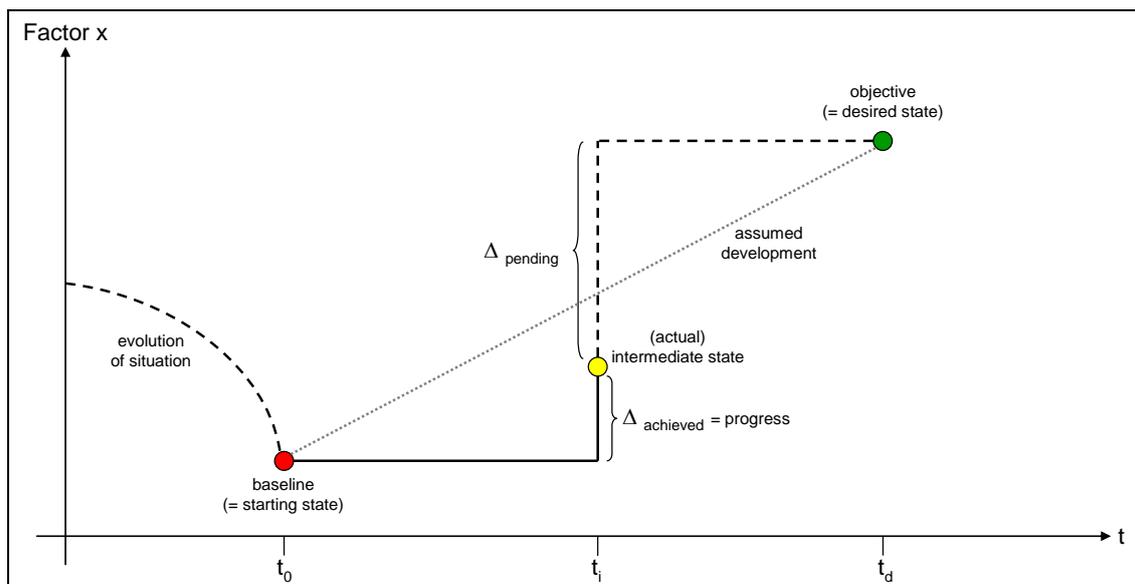
Figure 2: (Simplified) Sketch of Assessing Progress towards Objectives

An effective results-based management / outcome-oriented system usually includes the following assessment steps:[36]

- identifying clear and measurable objectives, aided by logical frameworks;
- selecting indicators that will be used to measure progress towards each objective;
- setting explicit goal states for each indicator, used to judge progress;
- developing monitoring systems to regularly collect data on actual results;
- reviewing, analysing, and reporting actual results vis-à-vis the stated goals and objectives;
- integrating complementing evaluations not readily available from monitoring systems;
- using assessment information for internal management accountability, learning and decision making processes, and also for external reporting to stakeholders and partners.

In order to comprehensively monitor and evaluate the development of the situation in the operational environment assessments need to look beyond own activities and related effects as outlined by own plans. Respective situation indicators should be used to reveal changes in the operational environment which were not planned for, but occurred (e.g., as a side effect, follow-on effect, or result of other actors' activities).

---

[36] Derived from [OECD/DAC 2000].

5.4 Indicators and Metrics

Assessments are based on measurements using indicators and metrics.

> **Indicators** measure what actually happens against what has been planned in terms of quantity, quality and timeliness. An indicator is a quantitative or qualitative variable that provides a simple and reliable basis for assessing achievement, change or signal that reveals progress (or lack thereof) towards objectives.[37]

The measurement of indicators is based on metrics.

> A **metric** is a standard of measurement by which efficiency, performance, progress, or quality of a plan, process, or product can be assessed in measurable (often quantifiable) terms.[38]

Different types of indicators are used for different purposes:

> **Situation indicators** describe the situation in the operational environment at a given point in time. They are used to reveal and assess changes in the operational environment.
>
> **Status indicators** describe the status of a system or element of the operational environment at a given point in time.
>
> **Measures of Effectiveness** (MoE) are used for assessing the realisation of specified effects in order to answer the question: "Are we doing the right things?" MoE measure the trend towards the attainment of an objective or effect.[39]
>
> **Measures of Performance** (MoP) are used for assessing whether planned activities have been carried out successfully in order to answer the question: "Are we doing things right?" MoP measure the completion of tasks by selected assets.[40]

Assessment is not simply the identification of indicators and metrics and related measurements at specific points in time, i.e. 'snapshots' of the situation or the system under consideration. Assessments have to consider dynamics and timelines to reveal trends, including:

- current status and states in the past;
- conducted activities (by all relevant actors) and relevant events which may have affected the environment;
- activities planned and anticipated events;
- planned outcomes/effects vs. occurring effects and achieved outcomes;
- anticipated developments and changes (linear trends / extrapolation vs. non linear developments);

---

[37] Based on [UNDP 2002].

[38] Based on [BD 2010].

[39] Based on [MNE6 GAP 2010].

[40] Based on [MNE6 GAP 2010].

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

– respective time dependencies between activities and assumed outcomes (requiring an appropriate timing of measuring points);

– other assumptions (such as assumed causal relationships).

Assessments usually require a combination of mutually complementing indicators such as direct and indirect indicators.[41] This is especially true for developments in the information environment where changes such as regarding attitudes, opinions, or trust of actors may be difficult to observe and may change relatively slowly.

5.5 Review of Existing Assessment Frameworks and Approaches

The identification and review of best practices in how civilian and military actors monitor and evaluate activities and outcomes of their programmes is relevant for understanding different approaches and underlying philosophies and to identify expedient elements for analysing and assessing the situation and changes in the information environment. Such elements could include methods, mechanisms, processes, indicators or filters which would provide input, e.g. for indicator models, for assessing progress towards objectives in the information environment.

For this purpose, a number of existing monitoring and evaluation approaches have been identified (see Annex E) and reviewed regarding content and design. Regarding the approaches reviewed the overall impression or tendency is that those used for general conflict analysis or specific lines of development[42] consider relevant aspects of the information environment minimally or not at all. On the other hand, approaches that directly focus on the information environment, such as [UNESCO IPDC 2007], cover many relevant aspects in detail. Guidance is needed on how to use these generic indicators in real life situations.

Current tendencies in constructing M&E frameworks can be summarized as follows:

– synchronization with existing approaches (identification and collection of „the best you can get", e.g. UNESCO IPDC);

– generic sets of variables, indicators, metrics and guiding/key questions;

– process-oriented design of assessment, including tools for moderated workshops in the field, e.g. tools for group work, report structures, and proposals for analysis results documents;

– comprehensible gap between theoretic/scientific foundation (e.g. see [Kaufmann/Kraay 2007], [Kaufmann et al. 2008] for types of indicators, difficulties of measurement; or [Smith 2004], [Smith 2008] for conflict theory) and simplified (mono-hierarchic) assessment structures;

– lack of explanations regarding the scientifically grounded, causal, and dynamic relationships among issues, variables, indicators, metrics, and guiding

---

[41] This concept refrains from repeating guidelines for developing appropriate indicators which may be found in several publications (e.g., see [OSS 2009] or [MNE6 GAP 2010]).

[42] For example [GTZ 2001] provides an overview and a comparative analysis of frameworks intended for German and international development co-operation and offers a classification of frameworks (classes: indicator based conflict analysis, strategic conflict analysis, and process oriented methods).

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

questions, e.g. with the use of explicit theories of change, communication theories, and practical experience;

– focusing civilian rather than military approaches;

– missing guidance in how to measure or even identify certain types of indicators (e.g., outcome indicators vs. impact indicators), and how to responsibly switch to alternative indicators/metrics;

– impact assessment remains a real challenge: direct vs. indirect influences of and correlation/causality between certain activities in an operational environment are difficult to identify and separate.

5.6 Requirements for Analysing and Assessing the Information Environment

5.6.1 Overarching Requirements

The analysis and assessment of the information environment should help to identify options to act in the information environment in order to influence the operational environment to support one's own goals and to hinder other actors to alter it against one's own interests.

Analysis and assessment of the information environment should help to

– describe and evaluate the situation in the information environment and its relevance to the management of the crisis;

– realise elements, factors, and aspects of the information environment relevant to the management of the crisis, and thus, the mission;

– differentiate symptoms from causes and correlations of the evolution of the situation in the information environment;

– estimate consequences arising out of the situation in the information environment and its parts on the overall evolution of the situation;

– understand and anticipate the dynamic behaviour of the information environment, i.e. how the situation in the information environment and its parts has been evolving and might (potentially) evolve;

– identify and rate challenges, opportunities, and risks related to the information environment, and options and requirements for shaping it;

– identify and describe conditions ('information objectives'[43]) and effects to be created in the information environment in support of mission goals;

– monitor developments and the situation in the information environment and evaluate the progress towards information objectives and overall mission goals;

– discuss on the above aspects within the coalition and with other actors.

---

[43] Information Objectives are defined as conditions to be created in the information environment. They should be measurable to enable analysis, planning, execution/management and assessment/evaluation of related actions and effects. [MNE6 FC 2010] Information Objectives represent intermediate system states or a more detailed description of the situation in the information environment en-route to the achievement of mission goals. They establish 'benchmarks' by which to evaluate the progress of an operation over time.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010
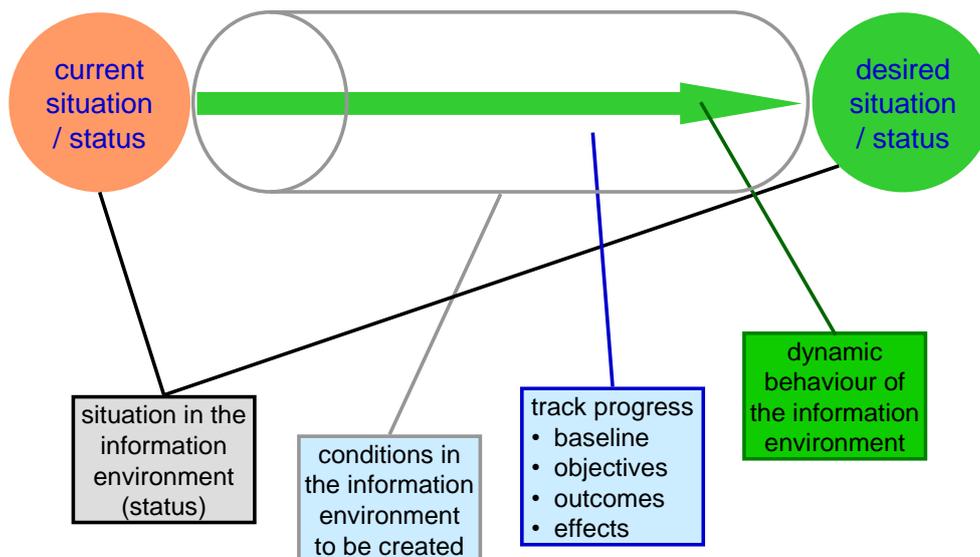
Figure 3: General Analysis and Assessment Requirements

5.6.2 Subjects of Information Environment Analysis and Assessment

The information environment as part of a crisis scenario deals with the relevant actors, their mutual communication and the cognitive processes that determine the actors' decisions. To fully understand the relevance of the information environment to the development of the overall situation it is necessary to look at the embedding of the information environment into the scenario.

A crisis is generally characterised by an unstable and potentially dangerous situation in a social system. Coalition forces in crisis reaction operations are thus confronted with situations that are unacceptable to the coalition and that are the result of wilful actions of certain actors.

An understanding of the information environment will help the coalition to resolve such situations through the capability of analysing communication patterns and strategies of hostile actors, to relate them to an actor's intents, objectives and goals and to devise own countermeasures.

Also the analysis of the information environment is a prerequisite for the development of strategies to influence actors in the coalition's sense by persuasive and argumentative means. The development of successful strategies to shape the information environment requires a thorough understanding of the various actors' goals and sub-goals, of their mutual relationships and of their ways of thinking and decision making.

Derived from these general requirements analysis and assessment of the information environment needs to address

– structures and dynamics of the information environment and its parts, based on sub-systems, actors, elements, and processes, and their relationships (interdependencies and interaction) as well as related cultural specifics;

– systemic interplay of parts of the information environment with the overall environment;

– the (assumed) potential for (directly and/or indirectly) influencing relevant elements, factors, and aspects of the information environment;

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

- appropriate factors, indicators, and metrics for describing and assessing
    o the situation in the information environment and its parts;
    o the status of relevant systems and elements of the information environment;
    o information objectives and effects to be created in the information environment;
    o progress regarding the implementation of plans and towards mission objectives.

5.6.3 Basic Characteristics of Complex Adaptive Systems

The information environment can be interpreted as a complex adaptive system of socio-technical systems, pervading the operational environment. Complex adaptive systems (CAS) show some characteristics that cause challenges regarding their analysis and assessment. These characteristics have to be considered carefully when analysing the information environment, e.g. regarding its dynamics.[44]

These characteristics can be structured in three groups distinguished by levels of aggregation (micro-level vs. macro level) and phenomenology (descriptions vs. manifestations of complex adaptive systems):

- Properties and mechanisms at the level of interacting elements
    o Coupling of elements;
    o Feedback;
    o Non-Linearity.

- Complex phenomena at the level of complex adaptive systems
    o Emergence;
    o Self-Organisation;
    o Adaptation.

- Properties at the level of complex adaptive systems
    o History dependence;
    o Co-Evolution;
    o Resiliance.

In addition to the characteristics explained above, there are also characteristics of complex adaptive systems that refer to human cognition and the perception and understanding of complexity. Examples are

- Policy Resistance
- Counter-Intuitive Behaviour
- Characterization by Trade-Offs

---

[44] This section only provides an overview of these basic characteristics of CAS. For details see Annex B.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

5.6.4 Specific Characteristics of the Information Environment

Specific characteristics of the information environment to be considered for analysis and assessment are associated with:

- the difficulty to gain and maintain an overall picture of the situation in the information environment;

- the time factor concerning cause-effect relationships, i.e., time delays between causes and effects;

- deliberate and inherent effects that are caused by any kind of activity;

- the challenge to assess the effectiveness and outcomes of an activity;

- the difficulty or even impossibility to 'predict' and distinguish between intended and unintended effects;

- the strategic impact informational effects may have;

- the lack of geographical boundaries;

- the challenge to differentiate symptoms and root causes of the situation in the information environment;

- the difficulty or even impossibility to identify originators of activities and effects, and their intentions.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

6 Modelling the Information Environment

This chapter describes the approach taken in this concept for modelling the information environment. As one part it provides an overview of the core piece – the model framework. The framework itself and its models are described in more detail in Annex C1.

6.1 General Modelling Requirements

The 'system information environment' – as understood by this concept – encompasses a considerable range of socio-technical sub-systems, elements and aspects, processes and relationships. Analysing and assessing the information environment should be based on a suitable set of models covering the parts of the information environment relevant to crisis management and their interplay.

Modelling the information environment in a systemic manner results in a generic conceptual model[45] of the information environment, or more precisely, in a set of conceptual models complementing one another to appropriately cover the broad spectrum of the information environment.

Such models will usually represent a more simplified image of the system under consideration due to one's incomplete knowledge of the highly complex 'real world' situation.

The information environment can be described in varying levels of detail via models. A model's level of detail directly depends on the analytical requirements regarding the fidelity to the real world situation, i.e., the higher the fidelity, the more complex the model.

The resulting models can serve as 'instruments of dialogue' to facilitate a common understanding of the information environment among decision makers, analysts, planners, operators, assessment specialists and other actors involved.

In order to fulfil this role as an 'instrument of dialogue' the models should structure and decompose the information environment from various perspectives or analysis areas. They should identify the specific systems and system elements of the information environment and their relationships as the underlying structures.

It is the complex dynamic behaviour of the information environment which induces the difficulties to understand and effectively shape the information environment. These dynamics are based on the underlying structures and need to be described by a set of corresponding models.

Furthermore, cultural specifics add to the challenge of comprehensive understanding since the meaning and value of information and the specifics of information processes are determined by its respective cultural context. Thus, the models should enable the consideration of such cultural specifics.

No single science or academic field of knowledge exists which comprehensively covers all aspects of the broad spectrum of the information environment. Therefore, modelling the information environment has to alternatively utilise various existing

---

[45] A conceptual model is a representation of how we think (conceive) about something. [Alberts/Hayes 2006].

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

models, methods, tools, and techniques which may be found in several different and overlapping or disparate scientific areas.

6.2 Theoretical Basis

A complete, deep and continuous understanding of all aspects and processes of an information environment at various aggregation levels turns out to be a hard or even unsolvable exercise. However, the identification and review of relevant theories and state-of-the-art models (such as human communication, public opinion, and opinion building) and their relationships/interfaces helps to gain a better understanding of factors and processes which are relevant for shaping the information environment in an outcome-oriented/effects-based manner. Especially cross-cultural specifics and perception-based insights have to be taken into account when analysing the information environment.

A transdisciplinary approach has been used to handle the immense amount of scientific and pragmatic knowledge available in a systematic manner.[46]

Communication theory itself remains a relatively young field of inquiry and integrates itself with other disciplines such as philosophy, psychology, and sociology. Currently there is no comprehensive overarching paradigm available that may serve as starting point for the work of communication researchers from different areas.[47]

Publications from the following theories and application areas have been reviewed and considered for developing the model framework, where applicable, including:

- Communication Theory
    - Communication Research
    - Marketing
    - Corporate Communication
    - Media Science
    - Journalism
    - Hypodermic Needle Model (Stimulus-Response-Theory)
    - Shannon/Weaver Mathematical Communication Model
    - Lasswell Formula
    - Two-Step-Flow of Information
    - Dissonance Theory
    - Agenda Setting

---

[46] "[…] transdisciplinarity is a research and scientific principle, which is most effective where a merely disciplinary, or field-specific, definition of problematic situations and solutions is impossible. […] transdisciplinarity is first of all an integrating, although not a holistic, concept. It resolves isolation on a higher methodological plane, but it does not attempt to construct a "unified" interpretative or explanatory matrix. Second, transdisciplinarity removes impasses within the historical constitution of fields and disciplines, when and where the latter have either forgotten their historical memory, or lost their problem-solving power because of excessive speculation." [Mittelstrass 2003]

[47] E.g.: "Any review of the impact of media on society or on individuals in society will find a great deal of controversy. Because there is evidence supporting many theories, examining many studies will reinforce a variety of opinions, even when one considers the same essential set of information." [Preiss et al. 2007].

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

- o Spiral of Silence
- o Berlo Communication Model
- o Diffusion of Innovation
- o Uses and Gratifications Theory
- o Elaboration Likelihood Model (ELM)
- o Extended Elaboration Likelihood Model (Extended ELM)
- o Heuristic-Systematic Model (HSM)
- Information Theory and Related Disciplines
  - o Information Processing
  - o Cybernetics
  - o Linguistics
- Systems Theory and related Disciplines
  - o System Dynamics
  - o Systems Analysis
  - o Complexity
  - o Operations Research
  - o Modeling and Simulation
  - o Actor System Dynamics (ASD)
- Social Sciences and Related Disciplines
  - o Sociology Psychology
  - o Social Psychology
  - o Market Psychology
  - o Media Psychology
  - o Operational Psychology
  - o Organisational Psychology
  - o Philosophy
  - o Art of Rhetoric (Aristotle)
  - o Persuasion Theory
  - o Theory of Reasoned Action (TRA)
  - o Theory of Planned Behaviour (TPB)
- Political Sciences
  - o Crisis Management
  - o Media Development
  - o Capacity Building
  - o Monitoring and Evaluation

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

6.3 Point of Departure

Currently accepted concepts on functions related to the information environment describe the existent understanding of the information environment and its core parts:[48]

– actors, including individuals, groups, and organisations, and relevant characteristics of those;

– specific information systems, including personnel, command and control philosophy, technical equipment, organisation, infrastructure, and supply dependencies;

– media, including personnel, assets, and infrastructure.

Together with a list of related guiding analysis questions[49] this understanding served as the starting point for developing the model framework of the information environment outlined by this document.

6.4 Overview of Models

The model framework contains different types of models:

– as a basic model an 'elementary communication model'

– structural models decomposing information environment in terms of relevant sub-systems and elements:

  o 'actor model'

  o 'media landscape model'

  o 'information system model'

– descriptive and process models:

  o 'issues of concern/interest for actors'

  o 'interrelationship model for actors and the media'

– influence models for relevant aspects and factors of the information environment

  o 'credibility of information sources'

  o 'attitudes of actors'

  o others

6.5 Model Descriptions

This chapter describes the models of the framework at a glance. For each of the models it provides an overview regarding its respective purpose, basic characteristics, and highest level view. Details of the models are provided at Annex C1.

6.5.1 Elementary Communication Model

This section describes an 'elementary communication model' that underlies any kind of communication process, simple ones as well as more complicated ones which can

---

[48] See military concepts such as [NATO AJP-3.10 2009] and [MNIOE 2008].

[49] See Annex G (based on [MNIOE 2008]).

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

be interpreted as a chain or sequence of this elementary brick of communication. The 'elementary communication model' capitalises on a number of simple communication models and appropriately integrates and enriches those for the purpose of this concept. The resulting model describes core elements of any communication process. It can be used for many purposes, e.g., for systematically analysing processes such as information flow between actors or in an operating environment or systems such as information systems of specific actors.

In the academic world there is no clear answer to the question, "What actually constitutes communication?" Currently, many definitions of communication are used in order to conceptualise the processes by which people assign meaning. Communication is also understood as the exchanging of understanding.

It is evident that the creation of an overarching theory of communication goes beyond the scope of this conceptual work. Therefore, the stepwise analytical integration of relevant and practical usable approaches and products in a transdisciplinary manner has to serve as a pragmatic solution for the construction of the generic model of the information environment.

Communication processes of mass media can be seen as a specialisation of a more general communication process. The basic communication process consists of a sender, a communication channel and a related medium, a message including content, and a receiver. The communication channel serves as a medium, such as print media or broadcast (electronic) media, through which a message is transmitted to the receiver, e.g. an intended audience.
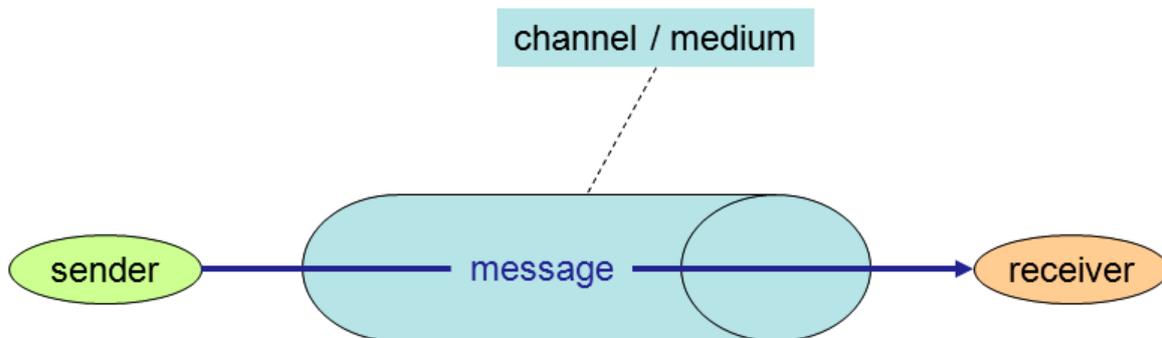

Figure 4: Basic Communication Model

Communication is a process whereby information/content is enclosed in a package/message and is channelled and imparted by a sender to a receiver via some medium. In order to allow a closer look at real world communication processes, the basic elements of such a process will be characterised in the following section in a generic way.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

An actor-oriented definition of the communication process serves as foundation for further analysis:

Definition: Communication is the exchange of information between actors through a system of signs, symbols, or behaviour.[50]

Each actor has available his own information system.[51]

A more detailed model of the linear one-way communication process – in which communication is directed from A to B without 'feedback communication' from receiver to the sender – looks like the following:
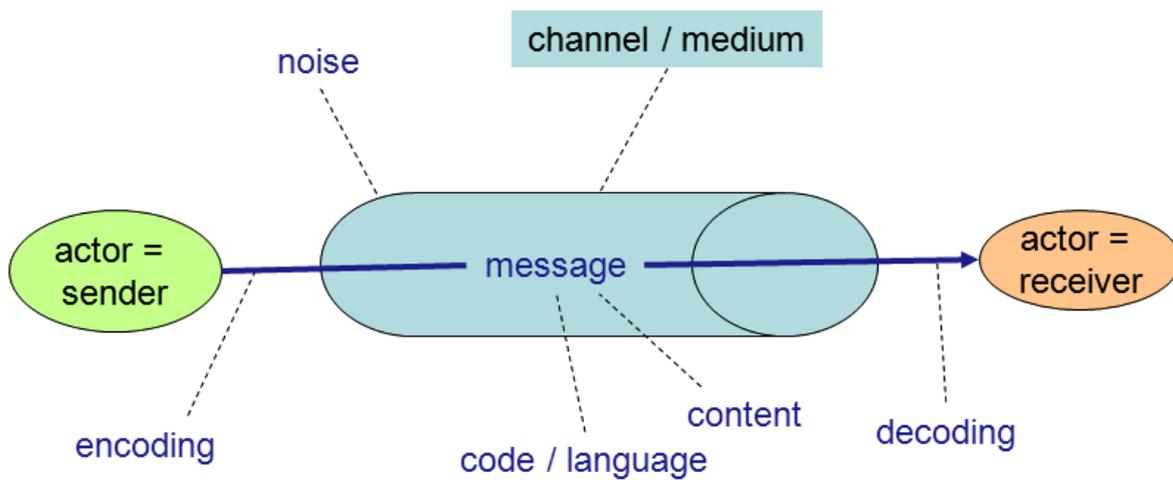
Figure 5: One-Way Communication Model

The elements of this linear communication process can be described as follows:

Sender: The actor in the functional role as sending communication partner ('sender') usually has an intention to communicate with the receiver.[52] This intention makes up the content of the message, often called input. The sender encodes the message with means of his available and chosen code(s). Thus he gives informal and formal expression to the content.

Message: The message represents content and refers to intended and interpreted meaning. Depending on the given context and intrinsic perception parameters, e.g. mental models of the actor, the interpretation and perception of the message occurs by communication partners.

Channel/Medium: The message is sent via a channel and a related medium, which can be made of a variety of materials. In acoustic communication it consists of air and airwaves in it, in written communication of paper or other writing materials with hand-written or printed text on it. In broadcasting, a channel is a range of frequencies (or, equivalently, wavelengths) assigned by a government or administrative body for the operation of a particular television station or radio station. Communication

---

[50] Therefore, a technical system itself as part of a socio-technical system may also serve as communication partner in the functional role of an actor.

[51] See section 6.4.2.3 on the ‚information system model'.

[52] However, following Watzlawick's principle this is not always the case: „One cannot not communicate!" [Watzlawick 1967]

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

partners use a lot of channels for natural (e.g., spoken word, eye contact) and technically mediated communication (e.g., television broadcasting). The channel serves as physical and technical predisposition for communicative interoperability.

Noise: The channel is subjected to various sources of noise. One example is telephone communication, where numerous secondary sounds are audible (e.g., while using a mobile phone in a tunnel). Even a temporarily rather solid channel such as paper can be crushed, stained, or yellowed, or defective pixels and certain monitor settings on the computer screen. Such phenomena are also noise in the communicative sense.

Receiver: The actor in the functional role as receiving communication partner ('receiver') decodes the incoming message, or expression. He "translates" it and thus receives the content, often called output. The content is processed by the receiver, depending on situational receiver characteristics (e.g., individual characteristics like education, social context, attention, attitudes, and mental models).

Code: In the communication process, the relevance of a code becomes obvious: The codes (system of signs (e.g., language), symbols, or behaviour) of the sender and receiver must have at least a certain set in common (code overlap) in order to make communication work meaningfully. Otherwise, related activity might become necessary, e.g., translation services for codes the receiver is unfamiliar with (e.g., languages). The code refers to the syntactic, semantic, and pragmatic level of communicative interoperability (see below).

When looking at the numerous variations of this scheme in communication research it becomes clear that great effort has been made over decades to refine the understanding of the overall communication process and its elements, and the conditions under which a communication process takes place. Scholars of communications science elaborated linear communication models like above, where communication is said to be one way, like reading a book or watching TV, where no immediate feedback is possible. Another example of one-way communication is receiving a letter (medium) with written text on it (coded content in form of a message) in areas, where no immediate feedback to the sender is possible.

In interactional communication models, where communication is said to be two-way, like a telephone talk, messages are sent and received one at a time with delay. Depending on the communication situation, e.g., in the case of communication via telephone, direct feedback of the receiver will immediately change the functional roles of the communication partners. The receiver steps into the role of the sender and vice versa many times in a conversation. Along the way, this type of communication becomes a so-called two way communication as depicted by the following figure:

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Figure 6: Two-Way Communication Model

A third kind of communication model labelled *transactional* communication model deals with communication taking place simultaneously at different channels, like face to face communication (F2F) or a video conference (VC), where verbal and nonverbal messages can be sent and received in parallel:
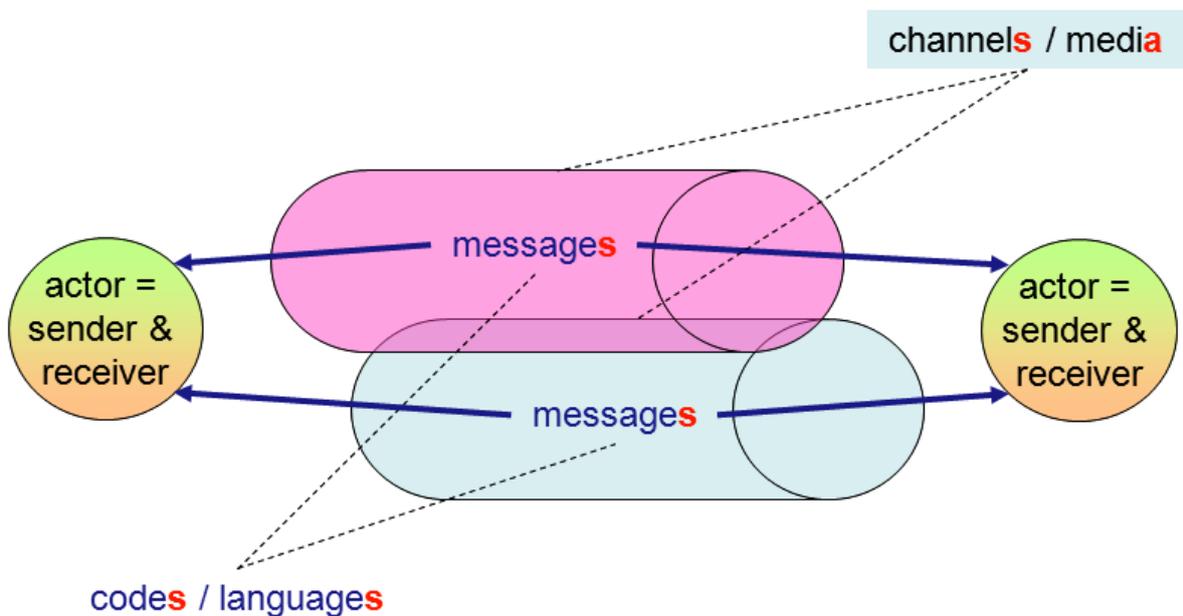
Figure 7: Transactional Communication Model

From a systemic viewpoint, it is necessary to highlight the relevance of contextual relations of the situation in which the involved communication partners are acting. In addition, the type and status of relations to other actors affect their way of communication and information processing.

Looking at the communication element 'channel' and the related 'medium' of communication, it becomes clear that interoperability is a precondition of meaningful and intended communication which can be established on four levels lying upon another.[53] On a technical level physical conditions are necessary for the exchange of data (e.g., wire, cable, or line of sight). On a syntactical level common data formats have to be used (e.g., rules of grammar or a mark-up language such as HTML for internet communication for web browsers). On a semantic level the interpretation of messages and terminology has to be agreed upon (e.g., used terms need to be known). On a pragmatic level a common evaluation of information has to be conducted (e.g., the same interpretation of the terms used by sender and receiver). Meaningful and intended communication requires that communicative interoperability is provided (at least to some degree) at all four levels.

Figure 8: Four Levels of Interoperability

The following examples show to what extent real life communication may consist of sub-processes in a complex integrated way:

- Telephone call: A sender tells (channel: spoken language) something via airwaves (medium) to his mobile phone (a mass medium device in the functional role of a two-way communication device). A mobile phone uses radio telecommunications over a cellular network of base stations known as cell sites (or it uses satellite communication), which transmit the encoded message to the receiving device of the receiver. Another mobile phone, which decodes these signals via telephone speaker into sound (channel: spoken language) and related air waves (medium: air) to the receiver.

- Radio broadcast: A radio moderator speaks something via air and airwaves into the studio microphone. These acoustic signals are being sent from the

---

53   E.g., see [Leuchter/Schönbein 2006].

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

microphone via wire and many intermediate technologies to sending devices: "The transmission, via radio-frequency electromagnetic waves, of audible program material for direct reception by the general public. Electromagnetic waves can be made to travel or propagate from a transmitting antenna to a receiving antenna. By modifying the amplitude, frequency, or relative phase of the wave in response to some message signal (a process known as modulation), it is possible to convey information from the transmitter to the receiver."[54] The radio listener uses a radio receiver[55] which is an electronic circuit that receives its input from an antenna, uses electronic filters to separate a wanted radio signal from all other signals picked up by this antenna, amplifies it to a level suitable for further processing, and finally converts through demodulation and decoding the signal into a form usable for the consumer, such as sound, pictures, digital data, measurement values, navigational positions, etc. The radio receiver turns the received radio signal into sound which goes via airwaves into the ear of the listener.

While studying contemporary and older scientific papers and discussing their value, some specific theories and approaches produced interest because of their obvious relationships to mindsets, attitudes, attitude change, and their suitability to describe the process of influencing and structuring public opinion and persuasion such as the Agenda-Setting Theory and the Elaboration Likelihood Model (ELM).[56] Such models are considered valuable candidates for complementing the elementary communication model for analysis purposes.

6.5.2 Structural Models

In a systemic manner, structural models are used to decompose the 'system information environment' in its relevant sub-systems and elements. Structural models help to define the system boundaries and to identify relevant parts of the system under consideration and their interrelationships.

The resulting structural models are used to structure and systemise analysis efforts.

Structural models build the foundation for describing the status of a system or element in terms of its attributes and relations. They are also the basis for developing models of other types such as process models or 'dynamic models'.

6.5.2.1 Top-Level View on the Information Environment

In accordance to the starting point chosen (see 'Point of Departure' above) a top-level decomposition of the information environment results in the following view:

---

[54] Internet: http://www.answers.com/topic/radio-broadcasting, seen 4 August 2010.

[55] See http://en.wikipedia.org/wiki/Receiver_%28radio%29, seen 4 August 2010.

[56] See Annex C2 for details on these specific communication models.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010
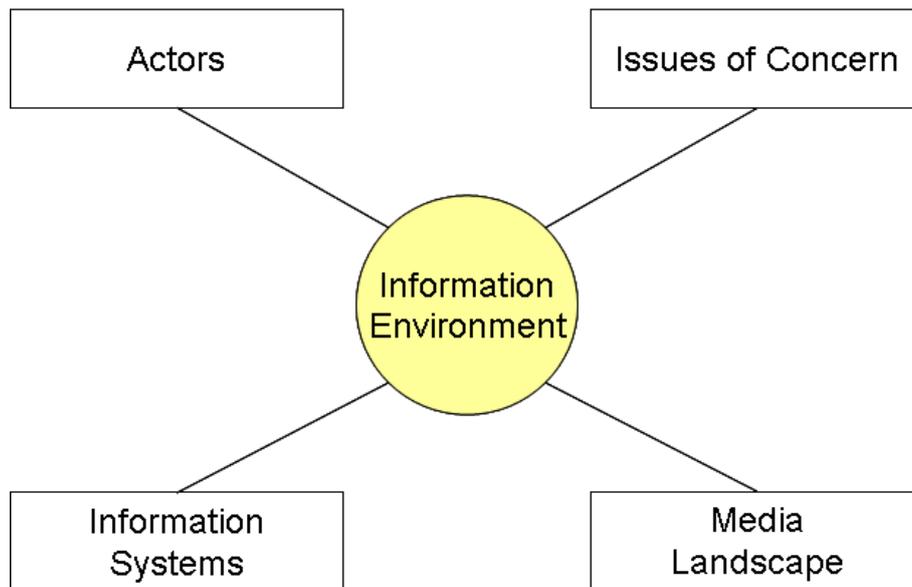
Figure 9: Top-Level View on the Information Environment

The following section describes the models developed for structuring these parts of the information environment for 'actors', 'information systems', and the 'media landscape'. For the part 'issues of concern' a descriptive model was chosen (see section 'Descriptive and Process Models' below).

6.5.2.2 Actor Model

The 'actor model' covers the basic ideas underlying the *concept of an actor* as a constituent of a dynamical system, e.g., the information environment. It delineates the basic processes and boundary conditions that affect an actor's decision making and activities.[57]

Categories of Actors

In the context of the information environment the relevant actors are persons or organizations, including state and non-state entities, within the international system with the capability or desire to influence others in pursuit of its interests and objectives. This includes governments, populations, hostile groups and organizations, their leaders as well as various kinds of media.

An actor has to be considered relevant if his behaviour significantly influences the outcome of the coalition's operation.

The structural 'actor model' is intended to be scalable and to be applied to actors in the categories:

- individuals,
- groups,
- organizations,

---

[57] The description of the 'actor model' in this section is only to provide an overview. Analysts should use Annex C1 which provides a more detailed description of the 'actor model'. All categories indicated in this overview are decomposed and explained in Annex C1 in a comprehensive manner.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

- communities,
- and societies.

Individuals are single human beings with characteristic traits, while the remaining types of actors are associations of individuals as their members.

Groups, organizations, communities and societies differ in their size, the nature of the subject that unites the members and the manner of how membership is obtained. The transition between the categories may be fluent.

Top-Level View of the Actor Model

The actor model consists of three parts, namely the 'basic structural model' that is kept abstract, an 'analytical factors view of an actor' to be used by system analysts and a 'descriptive-status view' of an actor suitable to military advisers.
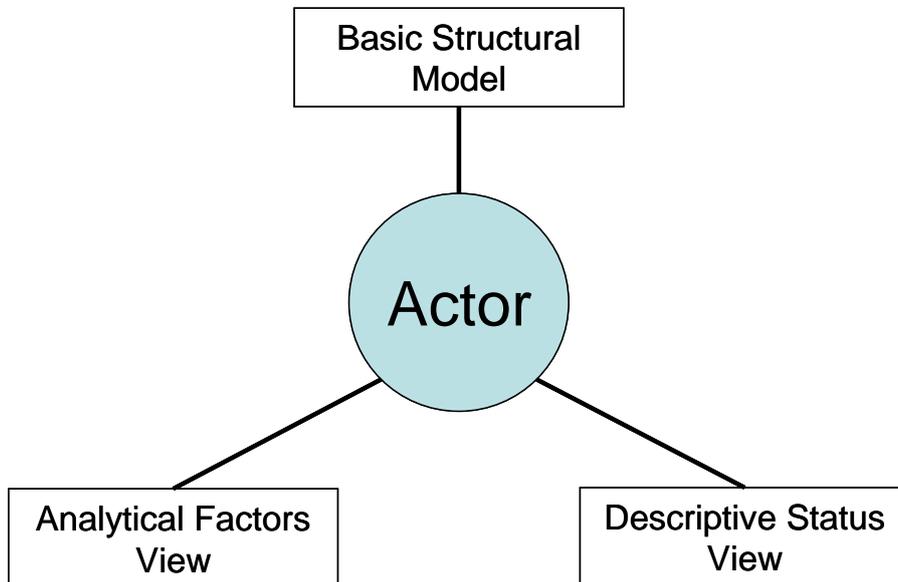
Figure 10: Top-Level View of the Actor Model

Basic Structural Model of an Actor

Figure 11: Overview of the Basic Structural Model of an Actor

The 'basic structural model' used to describe actors distinguishes four aspects (Figure) of actors that will be discussed below.

Goal System of an Actor

The basic structural model assumes that an actor pursues one or more overarching goals that arise as a result from the actor's own aspirations. More on this topic can be found as part of the 'analytic-factor-view'.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Boundary Conditions of Actors

Each actor operates in an environment that provides resources required for life and further development of life conditions. The resources that are under the actor's control together with opportunities (e.g. the existence of markets) and constraints (e.g. the existence of competitors) restricting the actors activities constitute the physical structures.

Figure 12: Boundary Conditions of Actors

In order to pursue his goals an actor needs the ability to behave actively and deliberatively. To this end, an actor establishes, maintains, and adjusts social structures that allow him to make use of his resources and to obtain material payoffs. The availability of resources as well as the occurrence of opportunities and constraints may vary over time.

In order to utilise the resources an actor has to establish social structures and to define associated rule regimes that together with corresponding institutions essentially constitute the political, economic, and cultural sectors. Social structures and resources together lead to the emergence of socio-technical systems that contribute to the capabilities of an actor.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Processes Conducted by an Actor
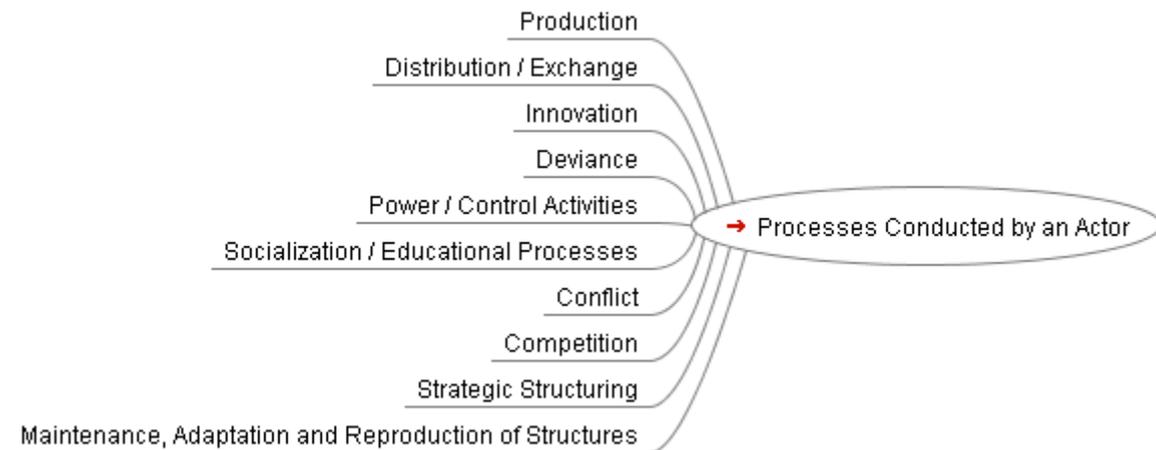
Figure 13: Domain Processes conducted by an Actor

The maintenance and improvement of social and physical structures are permanent tasks of an actor. Consequently, these structures are subjected to selection, adaptation, and transformation processes. As a result the socio-technical systems an actor is part of and/or has influence on will change over time as well.

Relationships between Actors

Actors necessarily interact with each other by various mechanisms:

- the mere presence of an actor affects the other actors' perception of the world;
- in addition, actors may have converging or diverging interests and hence mutually support or oppose each other.

The interactions between actors lead to the formation of mutual relationships. In turn, the interactions between actors are determined by their mutual relations. The quality of a relation arises from the degree of congruence of their interests, from the ways by which divergences in interests are reconciled, and from the results of their mutual evaluations leading to the development of opinions of and attitudes towards each other.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Figure 14: Domain Relationships to other Actors

The relationship between two actors can be characterized using the indicators *attitude* resp. *opinion* expressing evaluations of other actors, *orientation*, *goal congruence* and existing *power and control mechanisms*.

Analytical Factors View on an Actor

The abstract concepts described in the 'basic structural model' manifest themselves in attributes that characterise actors in the real world. In order to thoroughly understand the information environment and how to influence it, it is mandatory to collect data and information on as many of these attributes as possible. In practice, a tailoring process will align the actual data and information requirements with the realities of the scenario.
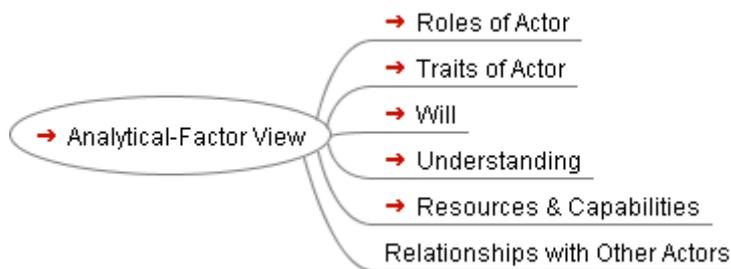
Figure 15: Overview of the Analytical Factors View

The information environment is embedded into the operational environment and hence a significant part of data and information on the relevant actors will be collected by other processes (and here notably Knowledge Development) that strive to gain an understanding of the operational environment. In practice, it will be advisable to distinguish between information used by military advisers and information required by system analysts. Military advisers rely on essentially descriptive information, while system analysts need more fine-grained information that can be used to select and adopt detailed sub-models.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

The analytical-factor view of an actor comprises characterizations of his roles, his general traits, the relevant factors describing his will, factors that are related to his understanding, the resources and capabilities the actor has at his disposal and the actor's relationships with other actors.

Descriptive-Status View

The descriptive-status view aims at providing a condensed picture of an actor's state with special focus on the information environment. It is intended to be used in situational briefings given by military advisers. The content of a descriptive-status view will depend on the command level where it is used. It should be worked out by the analyst and the military adviser jointly. The possible range of topics covered coincides with that of the analytical-factors view.

6.5.2.3 Information System Model

The information environment is defined as the virtual and physical space, in which information is received, processed and conveyed. It consists of the information itself and information systems.

Therefore, information systems are obviously a central element of the information environment. The 'information system model' outlined by this concept is intended to be 'scalable' in that it represents an 'information system' of an actor. Following the actor model of this concept an actor can be an individual or a non-individual such as an organisation or even a society. I.e., 'scalable' means that the 'information system model' should work for individuals as well as organisations and other actors.

The definition for information systems serves as a starting point for the model: Information systems are defined as socio-technical systems for the collection, processing and dissemination of information. They comprise personnel, technical components, organisational structures, and processes that create, collect, perceive, analyse, assess, structure, manipulate, store, retrieve, display, share, transmit and disseminate information.

Thus, (human and technical) elements of information systems are:
  – personnel
  – technical components
  – organisational structures
  – processes

These elements differ for individuals and non-individual actors (see below). In the case of an individual an actor can be interpreted as an information system itself – with or even without technical equipment. The information system of an organisation is composed of the information systems of its members and the specific organisational elements of this system, including e.g., the computer network, phones, and management information systems. E.g., communication and information systems (CIS) as well as command and control systems (C2S) are typical elements of the information system of a military (analogous civil) organisation.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Functions of information systems are (in brackets more detailed):

- collection (reception)
- processing (perceive, analyse, assess, structure, manipulate, create, store, and retrieve)
- dissemination (transmit)

The following model comprises these functions and related elements.

Figure 16: Information System of an Actor

Sensorial receptors are the 'input ports' of an information system. In case of human elements they refer to human senses (the traditional senses are sight, hearing, touch, smell and taste).[58] Technical sensors include optical, acoustic, biometric, and many other types of sensors. The sensorial receptors of an actor's information system comprise all kinds of access to other actors' information systems, including access to the media. In this sense a person's radio receiver can be interpreted as a technical receptor to 'sense' information from the media system.

Sensation comprises the impulse of stimulated sensory receptors of and its interpretation by an organism. From making use of this interpretation perception originates.[59] The *processing system* interprets the available data and information and processes these in many sub-processes and variations. Information processing of actors is a subject for respective process models and influence models.

---

[58] Other senses may refer to pain, balance, temperature, direction, joint motion and acceleration, or sense of time. Depending on the application area additional senses may be included.

[59] Based on [AlleyDog.com 2010]

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

The *storage system* is used to store and retrieve data and information. In case of a human being this would be his brain plus respective technical equipment he possesses for storing as well as any other kind of storage device (such as books). For non-individual actors this includes, e.g., the 'collective memory' of an organisation.

Communicative effectors are used as the collective term for sending elements, i.e., all (human and technical) assets and equipment that can be used to 'send' (display, transmit, or disseminate) information. They can use various channels and media.

For analysis purposes according to internal and external communication processes an internal and an external part of the information system should be differentiated as not everything created, processes, or disseminated is shared by the actor with other actors or his environment.
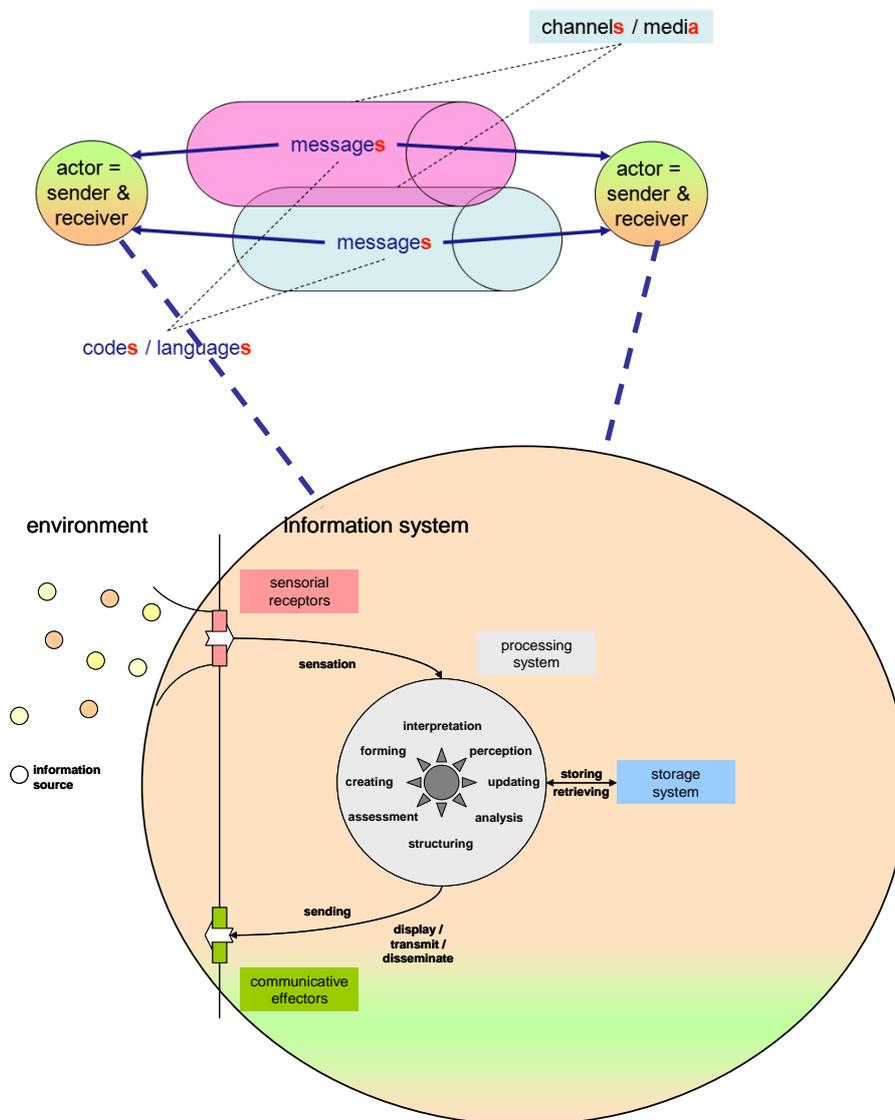
Figure 17: Information System and Communication Process

The 'information system model' fits into the 'elementary communication model' as the actors involved in the communication process can be substantiated by their 'information systems'.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

6.5.2.4 Media Landscape Model

The 'media landscape model' covers the basic aspects the analysis of the media as a system within the information environment needs to consider.[60]

Top-Level View of the Media Landscape

The media landscape (ML) is handled as a composition of elements, i.e. a system within the information environment.

Figure 18: Top-Level View of the Media Landscape

The media landscape consists of mass media[61] (MM) and is linked to conditions ('ML Conditions') which form the context of the media landscape and substantially affect mass media, e.g., political conditions ensuring freedom of expression or infrastructural conditions like the availability of electrical power supply.
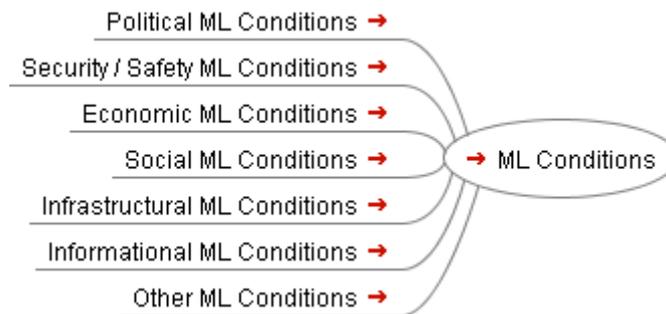
Figure 19: Media Landscape Conditions

The media landscape conditions are important to be analysed as (in a systemic manner) they are a part of the boundaries of the information environment and form interfaces to other systems (such as the 'political system'). These media landscape related conditions are structured using a slightly adjusted PMESII[62] view.

---

[60] The description of the 'media landscape model' in this section is only to provide an overview. Analysts should use Annex C1 which provides a more detailed description of the 'media landscape model'. All categories indicated in this overview are decomposed and explained in Annex C1 in a comprehensive manner. As MNE6 contributor to Objective 2.2, GRE provided a comprehensive national study on the 'international media system' the results of which were used as input to the development of the media landscape model (see [MNE 6 GRE 2010]).

[61] In communication, a medium is the storage and transmission channel or tool used to store and deliver information or data. The plural term media is often referred to as synonymous with mass media or news media, but may also refer to a single medium used to communicate any data for any purpose. Mass media denote a section of media specifically designed to reach a large public audience.

[62] The PMESII (political, military, economic, social, infrastructural, and informational systems) construct is often used for structuring the operational environment (e.g., [NATO KDH 2010]).

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010
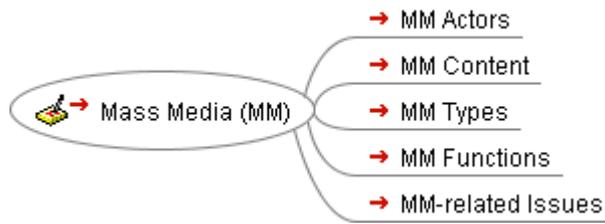
Figure 20: Mass Media

The model structures the mass media by actors, content, types, functions, and related issues.

Analytical Factors View on the Media Landscape

Media Landscape Conditions

Political Media Landscape Conditions
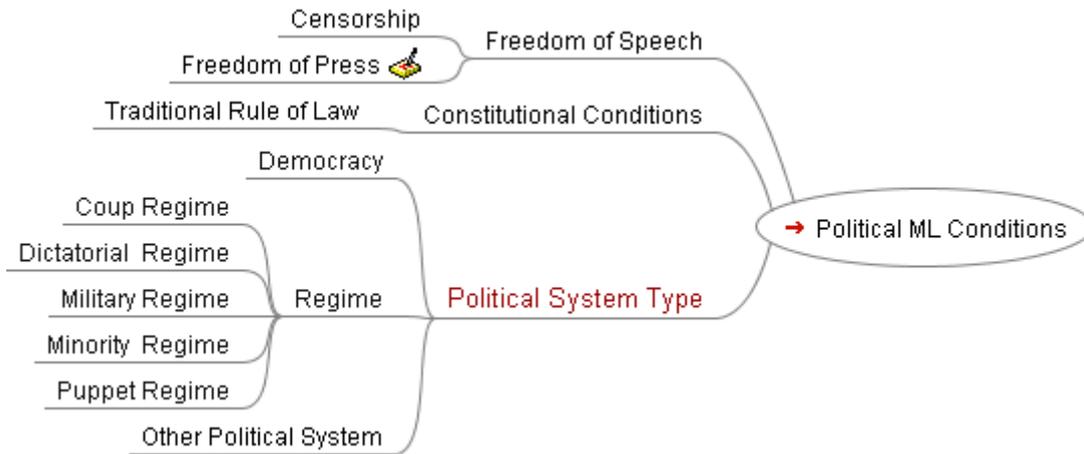
Figure 21: Political Media Landscape Conditions

Political media landscape conditions include the 'type of political system' (such as democracy, different types of regimes, or monarchy), 'constitutional conditions', and 'freedom of speech' as decisive aspects of the political context.

Media Landscape Security/Safety Conditions
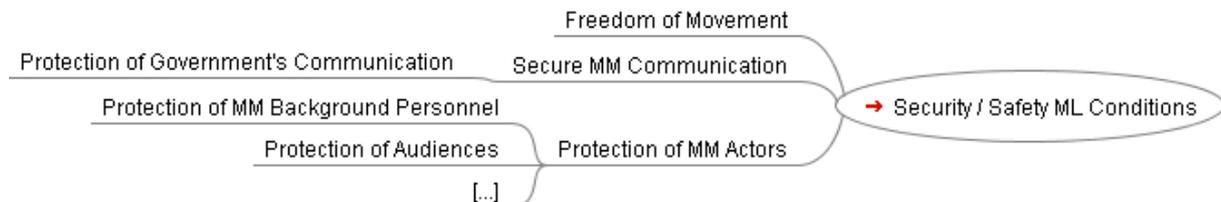
Figure 22: Security / Safety Media Landscape Conditions

Security/safety related media landscape conditions may appear in terms of the military 'protection of governmental communication' assets or other safety aspects such as any security-caused restrictions to 'freedom of movement', 'secure mass media communication', and the 'protection of mass media actors'.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Economic Media Landscape Conditions

Figure 23: Economic Media Landscape Conditions

Economic media landscape conditions include 'finances' (i.e., media-related money flows, e.g., regarding corruption and investigative journalism), and the 'job-market' (e.g., regarding critical journalists).

Social Media Landscape Conditions
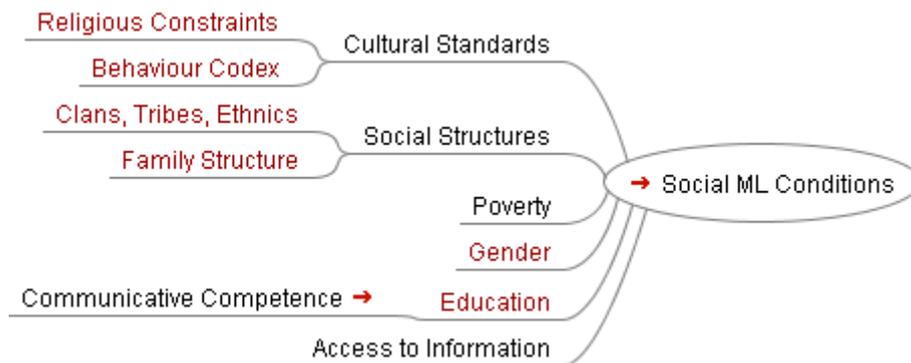
Figure 24: Social Media Landscape Conditions

Social media landscape conditions include 'cultural standards' (such as religious constraints and behaviour codex), 'social structures', and factors relevant for the role of the media in the society, e.g., the access to information, or aspects such as poverty, gender, or education.

Communicative Competence

A determining factor for the role of the media in an information environment is the level of 'communicative competence' of the people/audiences. 'Communicative competence' comprises the dimensions of 'media literacy' and 'intercultural communicative competence'[63].

Figure 25: Communicative Competence

---

[63] 'Intercultural communicative competence' is the ability of a person to behave adequately and in a flexible manner when confronted with actions, attitudes and expectations of representatives of foreign cultures (Meinert Meyer cited in [MNE6 FC 2010], p.51.). The concept of 'intercultural communicative competence' is discussed in more detail in [MNE FC 2010].

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Informational Media Landscape Conditions

Figure 26: Informational Media Landscape Conditions

Informational media landscape conditions focus on alternative ways of communication regarding mass communication, i.e. other than by mass media. E.g., in many pre-industrial and underdeveloped countries 'word of mouth' appears to be more important to the transmission of messages in the eyes of the population than typical mass media communication channels.

Infrastructural Media Landscape Conditions
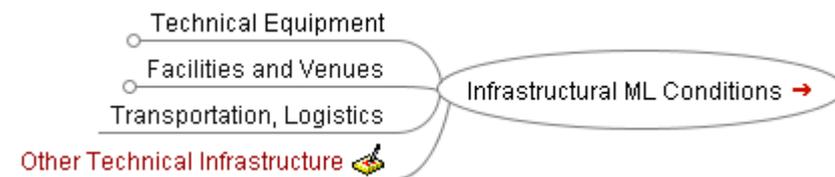
Figure 27: Infrastructural Media Landscape Conditions

Infrastructure plays an important role for the functionality and reliability of mass media (details see figure below). 'Technical mass media equipment' covers issues like, e.g., availability of devices such as receiving units (e.g., TV sets or radio receivers).

Mass Media

The mass media are structured by actors, content, types, functions, and related issues.

Mass Media Actors

Figure 28: Mass Media Actors

'Mass Media Actors' cover organisational entities, background personnel (e.g., journalists like photographers, meteorologists, commentators, reporters, columnists), foreground personnel (e.g., anchormen, talkmaster), audiences (e.g., target

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

audiences), and other mass media related actors (e.g., sellers like paper boys and book salesmen).

Mass Media Content
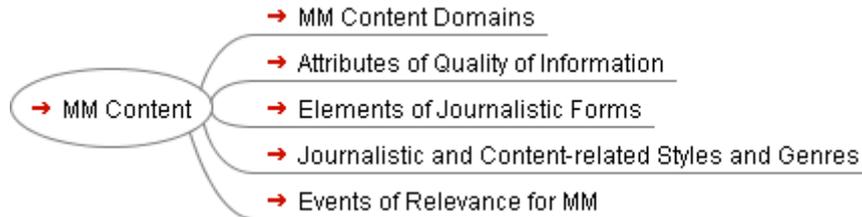
Figure 29: Mass Media Content

'Mass media content' is subdivided into content domains (e.g., entertainment, politics), attributes of quality of information (e.g., relevance, accuracy, timeliness, and credibility), elements of journalistic forms (e.g., headline), journalistic and content-related styles and genres (e.g., investigative journalism), and events of relevance for mass media (e.g., communicative events like demonstrations).

Mass Media Types

Figure 30: Mass Media Types

'Mass media types' are subdivided into technical and content-related types (e.g., news media). 'Technical types' are subdivided along the modality of media referring to the regarding sensory channel certain media are designed for. 'Content-related mass media types' cover high level media categories (e.g., business media or entertainment media).

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Mass Media Functions
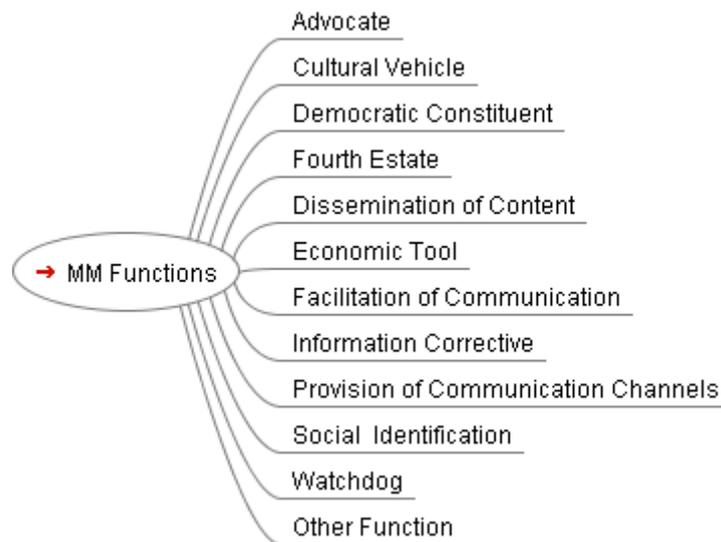
Figure 31: Mass Media Functions

Mass media can carry out many functions such as democratic constituent, cultural vehicle, and social identification.
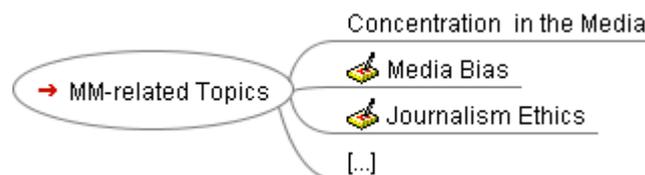
Mass Media Topics

Figure 32: Mass Media related Topics

'Mass media topics' are typical issues in discussions about the role and power of media, for example 'media bias'[64], which refers to the bias of journalists and news producers (e.g., regarding the selection of which events and stories are reported and how they are covered).

Descriptive Model of the Media Landscape

For practical application it is suggested to translate this comprehensive structural view – the detailed analysis model of the media landscape – into a descriptive status

---

[64] Media bias constitutes the violation of a set of standards in media coverage that characterize objectivity. Objectivity comprises the adherence to factuality that is truth and relevance and to impartiality. Media bias is present if there is a regular trend in media content that is volitional, teleological, threatening to conventional values and sustained. … *Volitional* implies that the media content is deliberately skewed as opposed to accidentally. *Teleological* points to the fact that media bias is done for a reason and is not pointless. The underlying perception is that media are biased to whatever extent to advance one or more of the media outlet's goals. *Threatening to conventional values* excludes radical and reactionary viewpoints that are too extreme to lead to much consequential persuasion. *Sustained* prohibits a diagnosis of media bias based on a single story. Media bias is consistent and persistent across time. Based on [D'Alessio/Allen 2007]

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

model as a pragmatic tool to be used by advisors and consultants on information environment aspects. This requires a selection of the most relevant system elements and the related understanding of their roles and dynamics in the system according to actual knowledge needs.

6.5.3 Descriptive and Process Models

This section outlines two distinct models:

1. a descriptive (in part question-based) model for 'issues of concern/interest to actors' (named 'issues occurring in the information environment');
2. a process model on the interrelationship of actors and the media.

6.5.3.1 Issues Occurring in the Information Environment

Generally, an issue is understood as a point or matter of discussion, debate or dispute. In the information environment context the focus is on issues of concern that are of particular relevance to and play an essential role in the thinking of one or more relevance actors. Such issues may bear a close relation to the drivers of conflict or be factors that potentially fuel or defuse the conflict. At least such issues are assumed to potentially influence the behaviour of actors.

The two principal aspects of an issue that are to be discussed in order to support an analysis of the information environment are the factors that make the issue an issue and the way the issue is covered by the media.

One aspect includes the identification of the very origin of the issue and the determination which characteristics cause its impact to the various audiences with the concept *involvement of audiences* being relevant here. The other aspect comprises a description of the coverage the issue receives by the media and the reason of its newsworthiness.

Figure 33: Central Aspects of Issue

Origin of Issues

Issues may emerge from actions (e.g., military operations), statements (e.g., political debates) and events (e.g., natural disasters). In an analysis of the information environment a partial task with respect to any relevant issue will be to trace back how precisely it has emerged. Conversely, any action on one's own part needs to be analysed with respect to whether and in which way it may become an issue.

Involvement

In the context of the information environment the focus will be on the coverage of issues by media and on how this coverage has persuasive effects affecting opinions and attitudes of the audiences that receive and process the messages contained in it.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

The central concept in the explanation of persuasion by messages is that of *involvement*. Several attitude-formation theories concurrently posit that involvement strongly determines the manner and the intensity with which messages are processed and is an important factor of a message's power to have impact on a person's attitudes.

Figure 34: Involvement of Audiences

Persuasion theory distinguishes three kinds of involvement that determine the questions to be asked in order to determine the relevance of topics and their coverage in the information environment. The following questions have to be answered with respect to all relevant audiences:

– Which explicit references to personal consequences to the members of the audience such a threats or promises does the issue contain?

– Which personal consequences to the audience's members does the issue imply according to the audience's customary thought pattern? The following dimensions lend themselves to an assessment of the relevance of personal consequences to individuals [Crano 1995]:

   o *stake* containing the perceived personal consequence itself,

   o *salience* referring to the individual's awareness of the consequences,

   o *certainty* describing the likelihood of the consequences,

   o *immediacy* referring to the perceived amount of time until the consequences will occur,

   o *self-efficacy* understood as the individual's perceived capability to personally cope with the demands implied in the consequences.

– In which ways is the issue relevant to the goals of the audience's members?

– In which ways does the issue touch personal values of the audience's members?

– Do the audience's members have the impression that their response to the issue will strongly affect others' perception of themselves?

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Media Coverage of Issues

Figure 35: Overview on Media Coverage

Issues are covered by various media. Factors that describe the coverage of an issue in the media address

– the *prominence* of the issue (e.g. whether the issue makes it to the headlines),

– the *intensity* of the coverage of the issue referring to the depth to which various facets of the issue are dealt with,

– the *continuity* referring to the duration and permanence of the coverage

– the *pervasion* of the issue across the media landscape.

An analysis of media coverage includes the following questions.

– Which media do cover the issue in which way?

– In which ways, why and on which actor's behalf do media

   o push,

   o suppress, or

   o bias

– the coverage of an issue?

– How and why do the prominence and the intensity of the occurrence of an issue in the media change over time?

Newsworthiness

Galtung and Ruge [Galtung/Ruge 1965] identified twelve factors that determine the value of an issue as part of news or, as they labelled it, its *newsworthiness*. In the terminology of Galtung and Ruge the factors are labelled and interpreted as follows.

– The *factor frequency* (of occurrence) means that events that fit well with the news organization's publishing schedule are more likely to be reported than those that occur at inconvenient times of day or night.

– *Threshold factor* (of remarkableness): News must have a certain degree of remarkableness.

– *Unambiguity*. News whose implications are clear make better copy than those that are open to more than one interpretation, or where any understanding of the implications depends on first understanding the complex background in which the news take place.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

– *Meaningfulness* relates to the relevance of a topic to an audience and to the degree of identification the audience has with a topic and boosts the coverage.

– *Consonance*: Stories that fit with the media's expectations receive more coverage than those that defy them. Thus, consonance essentially refers to the media's readiness to report an item.

– *Unexpectedness*. If an event is out of the ordinary it will receive more attention than something that is an everyday occurrence.

– *Continuity*: A story that is already in the news has good chances to get attention in the sequel.

– *Composition*: Stories must compete with one another for space in the media. Editors tend to maintain a sort of balance between different types of coverage, which may influence the prominence of issues.

– *Reference* to elite nations: Stories concerned with global powers receive more attention than those concerned with less influential nations.

– *Reference* to elite persons: Stories concerned with the rich, powerful, famous and infamous get more coverage.

– *Personalization*. News content that relates to individuals is more attractive than one in which there is no such human interest.

– *Negativity*. Bad news is more newsworthy than good news.

6.5.3.2 Interrelationship of Actors and the Media

This section presents a high-level generic conceptual model that comprises the fundamental concepts *actor* and *media* and additional concepts required to establish links between these two. The model identifies many of the generic aspects that must be considered in any analysis of the information environment. Elements central to the information environment include *actor, activity, medium, audience, information* and *issues (of concern to actors)*.

Starting at the concept actor the model can be developed as follows. An actor may assume one or more roles each of which entails certain long-term or strategic goals determined by the actor's aspirations. An example of an actor with more than one role is a politician who is also an industrial magnate. Strategic goals in turn are broken down into short- and medium-term objectives. The degree to which an objective has been attained is continuously monitored and evaluated. This evaluation may give rise to new activities on the part of the actor that will cause certain effects and as a consequence alter the state of the selfsame actor as well as the states of other actors. Thus all actors and their activities may be regarded as a system of mutually interacting control circuits.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Figure 36: Interrelationships between Actors and Media

Essential aspects of the information environment are the generation and dissemination of information and the relevance of this to communication and decision making. Media are the channels through which information is distributed among their audiences. The entirety of the information flowing through a medium makes up its media content that consists of media content fragments containing pieces of information. An article in a newspaper is an example of a media content fragment. Each media content fragment deals with certain topics and has influence on the audience. Audiences develop a perception of media with respect to their relevance and credibility. This perception significantly determines the degree to which media can influence opinions and attitudes of their audiences.

Actors are affected by the information environment due to the fact that they are parts of audiences. On the other hand actors both deliberately and involuntarily act upon the information environment. The former happens by exerting direct or indirect influence on media. The latter occurs because each activity conducted by an actor gives rise to events that in turn are covered by media and become topics in media contents fragments.

6.5.4 Influence Models

Influence models depict relevant factors and their (qualitative) interrelationships and form the basis for exploring the dynamic behaviour of systems. They complement other models describing the information environment or parts of it (such as basic models, structural models, or process models).

Influence models are developed on the basis of well-founded literature on certain topics to identify and visualise core factors and establish qualitative relationships

between them. They explicate mental models and make them available as *'instrument of dialogue'* to analysts, experts and users of analyses.

Influence models assist with the identification of feed-back loops and their specific types and characteristics. By doing so, they provide a starting point for the discussion of system dynamics and behaviour, and of the potential for influencing specific factors as well as of related consequences.

Influence models may contribute to analyses comparing mechanisms effective in a western environment to mechanisms assumed to work in other cultural environments.

In addition, influence models may serve as a starting point of further investigations on the dynamics in terms of quantifying system dynamics models (such as stock-and-flow diagrams).

This section refrains from showing influence models in the main body of this document. The influence models use causal loop diagrams the conventions for which needs to be explained in order to understand the meaning of what the models depict. Annex C3 provides the developed influence models on a number of factors related to the information environment and considered relevant for its analysis.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

7   Generic Analysis Process Model

The analysis of the information environment in a comprehensive and systemic manner is a supporting process. Its results bear relevance to decision making at all levels of involvement. The process model delineated subsequently shows the generic steps to be taken in order to obtain a systemic understanding of the information environment. It addresses the fundamental tasks of scanning, monitoring, and anticipating the evolution of the information environment.

Two major groups of activities are distinguished. The activities in the first group create the necessary preconditions for conducting systemic analysis. The activities in the second group are the analysis. Systemic analysis by its very nature is adaptive to changing boundary conditions. Hence both groups of activities must be performed continuously and simultaneously.

The systemic understanding of the information environment will be based on information, knowledge, hypotheses and assumptions. Analysts, experts and customers need to have a common knowledge and understanding of these. Thus an environment will be required that enables collaboration and provides access to data, information and knowledge relevant to the information environment. In the following it is assumed that corresponding capabilities are supplied by suitable tools that provide a collaboration environment and are capable of giving access to the fundamental data on the information environment as well as to data that arise with the analysis of the information environment as input data or analysis results. The tool that stores the knowledge on the information environment is denoted as information environment knowledge base.
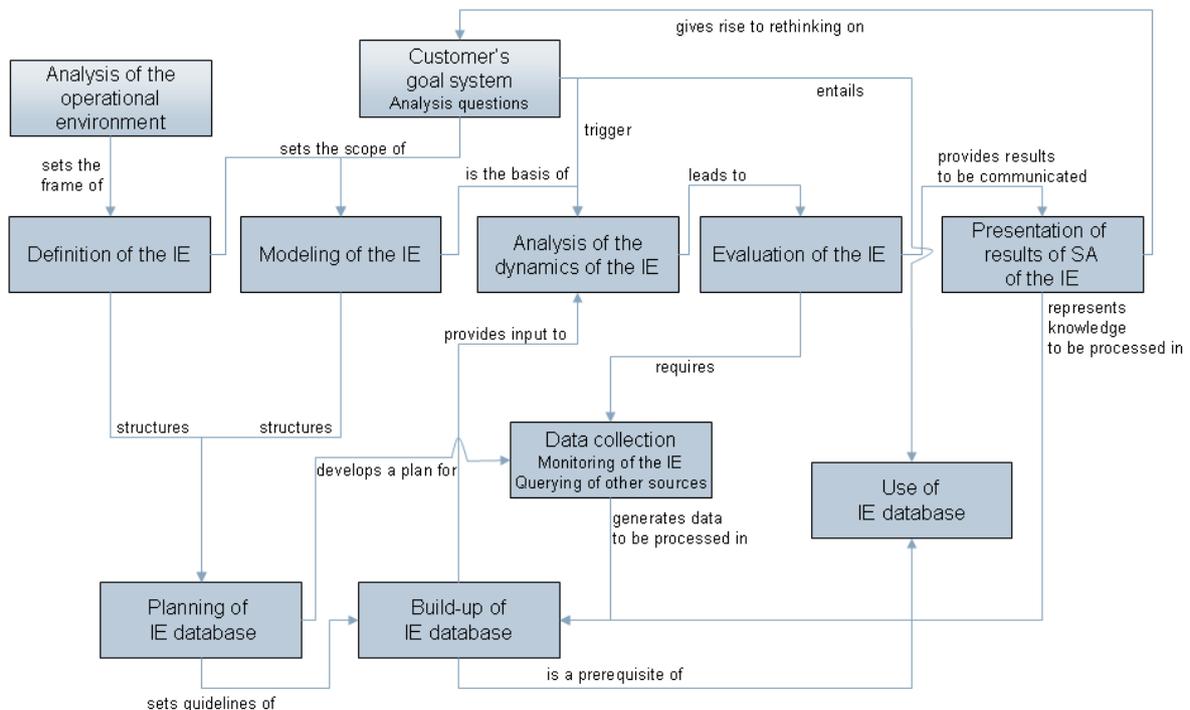
Figure 37: Generic Analysis Process Model

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

The first step leads to the initial *'Definition of the IE'[65]* with an identification of the relevant actors, audiences, media, information systems and relevant themes (i.e., drivers of conflict and/or issues of concern). Input to this step has to be provided by an analysis of the operational environment and of the objectives of the coalition that determine its goal system.

Both set a frame of what the analysis of the information environment must strive to achieve and hence bear consequences on the scope, depth and focus of the modelling of the information environment. More information on the development of a model of the information environment is given later in this chapter.

The definition of the information environment and the modelling of its elements induce a necessary structure of the organization of data, information and knowledge, and for the further accumulation during the analysis of the information environment. The definition of this structure is the primary result of the activity '*Planning of IE database*'. It furthermore indicates which kind of data and information will be required and generated. Based on this a plan is developed on how to implement the information environment database. Activities in this context include (a) the identification of the basic required data and information; (b) the identification of national and alliance sources of knowledge together with an appraisal of their availabilities, accessibilities and release policies; (c) the planning of the integration of information and knowledge into the information environment knowledge base with respect to procedures and time schedule. The resulting plan on the collection of the data identifies and contains

- the relevant available national and alliance knowledge and recognizes knowledge gaps;
- a prioritised list of sources of information and formulates requirements to monitoring activities in the information environment;
- a prioritized task list for the integration of data and information into the information environment database;
- guidance on how to fuse data from different sources into a single database;
- rules and procedures for the access to the information environment database defining roles of users with associated user permissions and, if applicable, workflows.

The step *'Data collection'* follows the plan that has been developed previously. It may be the case that the required data have to be generated first, e.g. by conducting a content analysis of selected sources. When the data are available the various sources are accessed and the data are extracted and stored in a form that enables the integration into the information environment database. This may include a pre-processing of raw data.

The *'Build-up of the IE database'* requires the installation of the respective tools. Initially, the users are set up according to the requirements of their respective roles. The aim is to ensure that each user is able to gain rapid access to the required available data, information and knowledge elements. Then the available data, information and knowledge are transferred into the information environment

---

[65]   In the process model as depicted by Figure 37 the information environment is abbreviated by 'IE'.

database. The structure of the database obeys the principles and guidelines developed in the step *'Planning of IE database'*. The raw or actual data are the output from the step '*Data collection'.* The information environment database should be continuously checked. This includes the elimination of duplicates and redundancies and the assurance of the reliability of its contents.

The step *'Modelling of the IE'* provides an explicit operationalised representation of the information environment resulting in a detailed and defined description of the relevant elements of the information environment with their characteristic parameters and their interrelationships. A family of models is to be identified that are suitable to describe the interactions of the elements and to appropriately represent the inherent dynamics. The models are designed to represent a coherent picture of the information environment as a system and be suited to serve as a framework for the description, exploration and explanation of the information environment. Typical interactions the modelling has to cover are the leverages actors exert on media, the manners the various media act, the ways the media shape opinions and attitudes and influence actions. The mechanisms through which the information environment affects the operation as a whole are to be determined and elucidated.

The step *'Analysis of the dynamics of the IE'* strives to improve the understanding of the information environment and to reveal actors' possible future actions, strategies, and behaviour with respect to the information environment. This implies the consideration of various courses of action, their possible consequences, and the implications thereof for the overall system.

The inputs to this step include:

- descriptions of the relevant elements in the information environment and their characteristic parameters
- visualisations (e.g., influence diagrams or causal loop diagrams) of the interactions and relationships between these elements
- models that represent hypotheses on the dynamical development of actors, actions, resources, effects, including indications of impact, intensity, time behaviour and feedback
- higher authority's and Commander's guidance
- information requirements from other staff branches and non-military partners

This step is primarily an effort to answer the question "What would happen if…?." In this the bounds provided by the customers' goal system, the information requirements from the staff as well as knowledge previously acquired determine the setup and the focus of the analysis to produce representative, relevant and useful insights.

The chosen setups result from a discussion of options regarding the possible actions and strategies of relevant actors in the information environment. These options should be based on commander's guidance, staff information requirements, experience from past observations of the information environment, expert advice, and the analysis performed in prior steps. This discussion is an iterative process involving experts, planners, and decision-makers. These options serve as stimuli for simulating the dynamics of the information environment. 'Simulation' here means a broad range of methods from intellectual games (e.g., expert discussions or wargaming) to complex computer-based simulation systems. The simulations shall

not be confined to the information environment but rather look at the implications of the information environment on the entire operational environment.

The rational for choosing the options for further analysis is given through discussions and the facts and instruments developed in the preceding steps. Argumentative links, e.g. to causal loop diagrams, influence diagrams, and taxonomies, are established.

Simulation, in the broadest sense of the word, will be used for the examination. Specific simulation styles will be selected depending on the objectives, the available time, and complexity of issues to be examined. These simulations of possible future behaviour will enrich the background knowledge on the information environment necessary to inform the staff during the planning, execution, and assessment phases of a mission on the developments in the information environment and to give advice on the implications for the entire mission.

The purpose of the *'Presentation of IE analysis results'* is to communicate data, information, and knowledge acquired through the analysis to the respective customers in a manner suitable for their needs.

Inputs to this step are:

- the systemic understanding gained in the steps *'Modelling of the IE'* and *'Analysis of the dynamics of the IE'*,
- usable and communicable forms of representation of the findings,
- questions and feedback from the customers.

The updates to recipients may be provided routinely, periodically or on-call. They strive to provide an understanding of the state of the information environment to the staff and thus support decision-making by the Command Group. This may give rise to additional questions for analysis as well as lead to an adaptation of decisions within the staff and other organisations.

Steps Towards a Dynamic Model of the Information Environment

It is suggested that the development of a dynamic model of the information environment be undertaken using a stepwise approach. The steps are

- ascertainment of the required scope and scale of the model of the information environment,
- development of a static model of the information environment that covers its relevant systems and system elements,
- modelling of the dynamics between these elements based on available theories and fundamental models (e.g., on communication, perception, credibility). It should be noted that in certain cases there will be a lack of validated adequate dynamic models that may be applied in the given cultural environment. In these situations it will be necessary to fall back on dynamic models based on plausible assumptions.

The above processes are based on iteratively, continuously reviewing and adapting the results. Typical formats of the products emerging from the above steps are mind-maps, cognitive maps, causal loop diagrams, and stock & flow diagrams.

The generic steps in the development of a static model of the information environment are:

- define relevant systems and their boundaries

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

- identify potential hierarchies of systems

- identify relevant systems or elements within a system

- define attributes that describe key characteristics of the system elements

- identify interfaces between systems /system elements

- identify and describe internal and external interrelationships

- identify interactions/interdependencies between systems/system elements

Understanding and describing cause-effect relationships and dynamics within the information environment require the following steps to be performed:

- obtain quantitative and qualitative data, information, and knowledge about the dynamics of the relationships within the static structure

- assess the quality of available data and information about the system in terms of likelihood and uncertainties

- determine assumptions necessary for abstraction or simplification purposes and for handling uncertainties

- analyse the dynamic behaviour of systems

- identify/anticipate cause-effect-relationships and correlations with respect to the behaviour of the system under consideration (including quantitative/qualitative impacts, higher order effects, and reaction on stimulation)

- identify reinforcing and balancing feedback loops, and potentially resulting 'oscillating' behaviour

- evaluate the stability and robustness of systems regarding external influences

- identify evolutionary trends (based on empirical/historical and assumed views and objectives of relevant actors, of comparable systems/societies/states)

The influence models described in Annex C3 constitute a framework that can be used to discuss the dynamic system behaviour that is induced by a particular strategy, action or behaviour in a given situation. Thereby, a fundamental task consists in mapping observable operational facts and quantities to concepts occurring in those models and vice versa. This task will have to be accomplished by analysts with a thorough understanding of the information environment and the operational environment as such as well as of the meaning, the underlying assumptions, and the validity of the models.

The steps to be performed in order to use influence models in the analysis are:

- identification of the operational key factors, the dynamics of which are to be investigated

- identification and assessment of applicable influence models

- selection of the models that are sufficiently suited to be applied

- identification of aspects deemed to be relevant to the dynamics of the information environment but not covered within the selected models

- formulation of hypotheses that may be used to model the system aspects identified in the preceding step

- formulation of the expected consequences of possible strategies, actions or behaviour within the system

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

– application of the selected models and examination of the formulated hypotheses

– analytical interpretation and evaluation of the generated data

The significance of the various aspects of the information environment depends on the scenario. Specific guiding questions should be developed that can be used to mark dynamic relationships within the static model of the information environment and to document the need for explanatory models, e.g. on communication, information flow or perception (see Annex D).

Generally, an analysis of the role of the information environment to an actor may consider the following lines:

– identification of the actor's (strategic) goals

– identification of the actor's objectives

– dependencies of the actor on other actors' support or compliance in the pursuit of these objectives

– sources of opposition against the actor's goals

– the role of the information environment in obtaining the other actors' support or compliance

– the information environment as factor weakening or strengthening the opposing forces

– the actor's capabilities to act in, exploit, and affect the information environment

– the modus operandi of an actor in the information environment

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

8 Outlook: An Integrated Indicators System

As learned from the review of existing assessment / monitoring & evaluation frameworks (see section 5.5) there is no approach or framework available which offers the general view on an operational environment combined with specialised views regarding the information environment in a well-balanced manner. Hence, a suitable solution can be to elaborate assessment indicators especially for the information environment and to fit them into a system of general assessment indicators on a common foundation.

By using an integrated system of indicators in form of a semantic network the analyst would have a powerful tool at hand. Such a tool would provide a retrieval functionality regarding interrelated variables of analytic models and a collection of respective indicators and metrics supporting the analyst to rapidly assess the information environment at appropriate levels of detail. An integrated network of generic issues of relevance, variables, and factors of models, such as influence models and process models, and indicators could support such functionality. The instantiation of this generic input according to real life situations remains as an analytical task of the user.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Glossary of Terms and Definitions

Activity

Actions taken or work performed that translates inputs into outputs.

[DCDC CIP/CIME 2008]

An element of work performed during the course of a project. An activity normally has an expected duration, an expected cost, and expected resource requirements. Activities can be subdivided into tasks.

[MNE6 FC 2010]

Actor

An actor is a socially acting individual or a formal or informal group of individuals. Actors have intentions, make choices, and participate in the construction (and destruction) of social systems. They are embedded in social structures with political, economic and cultural rule regimes and in physical and ecosystem structures with time-space conditions, natural resources, natural constraints and material payoffs.

[IABG 2010]

Analysis

Analysis is a continuous process to develop and maintain situational understanding by framing the problem space under consideration. Analysis is understood as a detailed examination of all the constituent elements of a situation, and their inter-relationships, in order to obtain a thorough understanding of the past, present and anticipated operational context. This should include both the overt symptoms and underlying causes of the situation.

Based on [DCDC JDP01] and [DCDC JDP 5-00]

Adaptive System (see also Complex Adaptive System)

An adaptive system is a set of interacting or interdependent entities, real or abstract, forming an integrated whole that together are able to respond to environmental changes or changes in the interacting parts. Feedback loops represent a key feature of adaptive systems, allowing the response to changes; examples of adaptive systems include: natural ecosystems, individual organisms, human communities, human organizations, and human families. Some artificial systems can be adaptive as well; for instance, robots employ control systems that utilize feedback loops to sense new conditions in their environment and adapt accordingly.

[Answers.com 2009]

Areas of Activity

Areas of activity denote the national or organisational means to enforce political will or exert influence on others. Broad categories of actions taken to influence a crisis environment include politics/diplomacy, economy, information and security services (civil and military), as well as cultural/developmental activities, humanitarian assistance, and civil administration support. (Also referred to as 'Instruments of Power')

Based on [MNIOE 2009b]

Assessment

Assessment is the evaluation of progress through auditable judgements, based on levels of subjective and objective measurement, in order to inform and support decision-making. The

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

assessment of progress is a fundamental review and feedback function and enables evaluation and re-orientation. The assessment process indicates potential impact of planned activities in the future, contributing to maximise positive (and minimise negative) effects, and avoid unintended, undesirable consequences.

Based on [DCDC JDP01] and [DCDC JDP 5-00]

Attention

Attention is the cognitive process of selectively concentrating on one aspect of the environment while ignoring other things. Attention has also been referred to as the allocation of processing resources: It as a concentrated direction of the mind, especially to a problem or task.

*Based on [*http://www.thefreedictionary.com/attention *and*
http://en.wikipedia.org/wiki/Interest_%28attention%29*, both seen 3 August 2010]*

Attitude

An attitude is a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour.

[Eagly/Chaiken 1993]

Audience

An audience is a group of people that has similar opportunities of receiving the information circulating in the environment. Typical criteria that can be used to identify subsets of audiences of specific interest are location, race, gender, ethnicity, status and role as well as expectations, foreknowledge, engagement and identification.

A target audience is an audience designated as the recipient of messages.

[IABG 2010]

Belief

A belief is related to an estimate of the likelihood that knowledge acquired on a subject is correct or, alternatively, that a certain event or state of affairs has occurred or will occur. The magnitude of the estimated likelihood is commonly referred to as the strength of the belief.

[Wyer/Albarracín 2005]

Benchmark

A benchmark is a standard of excellence, achievement, etc., against which similar things must be measured or judged.

Based on [Dictionary.com 2009]

Coalition

An ad hoc or temporary grouping of nations and/or organisations united for a specific purpose / in a common cause.

[MNE6 FC 2010]

Coherence

The harmony of parts to one another as a whole (synonyms: consistency, correspondence).

[MNE6 FC 2010]

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Command and Control System (C2S)

A Command & Control System (C2S) consists of an assembly of equipment, methods and procedures – including planning and decision-making tools –, and personnel that enable commanders and their staffs to exercise command and control.

[NATO 2007]

Communication

Communication denotes the exchange of information between individuals through a system of signs, symbols, or behaviour.

Based on: [MNE6 FC 2010]

Communication and Information System (CIS)

A Communication & Information System (CIS) consists of an assembly of equipment, methods and procedures and, if necessary, personnel, organized to accomplish information processing and transfer functions.

[NATO 2007]

Complex System

The phenomenological definition of a complex system is that it exhibits nonlinear, emergent, adaptive behaviour. Nonlinear behaviour is associated with far-from-equilibrium, open systems, in that cause and effect are no longer linearly connected. This is ultimately due to the type of internal-external system interactions (feedback) affecting our system.

[Moffat 2003]

Complex (Adaptive) System

A complex adaptive system is a dynamic network of many agents (which may represent cells, species, individuals, firms, nations) acting in parallel, constantly acting and reacting to what the other agents are doing. The control of a complex adaptive system tends to be highly dispersed and decentralized. If there is to be any coherent behavior in the system, it has to arise from competition and cooperation among the agents themselves. The overall behavior of the system is the result of a huge number of decisions made every moment by many individual agents.

[Holland 1994]

Comprehensive Approach

The comprehensive approach encompasses the wide scope of actions in international crisis management, undertaken in a coordinated and collaborative manner with the affected nation(s). Co-ordination and collaboration includes national civilian government agencies and their defence and security forces, international and intergovernmental organisations, non-governmental organisations and the private sector to achieve greater harmonisation in the analysis, planning, management, and evaluation of actions required to prevent, ameliorate, mitigate and/or resolve the conditions precipitating a crisis.

Based on [USJFCOM 2007]

Conceptual Model

A conceptual model is a representation of how we think (conceive) about something.

[Alberts/Hayes 2006]

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Conflict

Takes place when two or more parties find their interests incompatible, express hostile attitudes, or take action, which damages the other parties' ability to pursue their interests.

[DFID 2002]

Conflict Analysis

Conflict analysis is a means of developing a multi-dimensional understanding of the causes and dynamics of conflict as well as the capacities for peace.

The aim of Conflict Analysis is to better understand the historical and structural antecedents of violent conflict and to better understand what converts latent conflict into open conflict or intensifies existing open conflict. The methodology, in conflict assessments conducted to date, has focused on analysis of conflict structures, actors and dynamics. Although for analytical purposes it is useful to divide analysis into these three areas, in reality they are closely inter-linked and should be viewed holistically.

[DFID 2002]

Conflict Assessment

From the viewpoint of development organizations, conflict assessments are diagnostic tools that are designed to help Missions: 1) identify and prioritize the causes and consequences of violence and instability that are most important in a given country context; 2) understand how existing development programs interact with these factors; and 3) determine where development and humanitarian assistance can most effectively support local efforts to manage conflict and build peace.

[USAID CAF 2005]

Conflict Management

Conflict management orchestrates activities undertaken with the main objective to prevent the intensification or spread of existing violent conflict.

Based on [DFID 2002]

Conflict Prevention

Conflict prevention orchestrates activities undertaken by internal or external actors over the short term to reduce manifest tensions and/or to prevent the outbreak or recurrence of violent conflict.

Based on [DFID 2002]

Conflict Reduction

Conflict reduction orchestrates activities undertaken to reduce the incidence, duration and destructiveness of violent conflict.

Based on [DFID 2002]

Conflict Resilience

Conflict resilience is understood as a situation where conflict issues are dealt with through political and social processes rather than through the employment of violence. It includes creating and supporting institutions in a country which allow for the management of conflict in a non-violent and inclusionary manner.

[World Bank CAF 2005]

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Conflict Resolution

Conflict resolution orchestrates activities undertaken over the short term to end violent conflict.

Based on [DFID 2002]

Conjunctural Model

This type of model aims at explaining complex patterns or thresholds, and tries to specify alternative sequences or scenarios of events, based on combinations of conditions. The aim no longer is to understand the why and how of conflict escalation, but to focus specifically on the intensification of the conflict situation. These event-related data approaches are strongly dependent on media coverage.

Based on [Van de Goor/Verstegen 1999]

Correlation Model

A correlation model focuses on structural indicators and causality, arguing that, in order to come to valid and reliable early warning, substantially more attention is needed to identify the connections among conflict phenomena. Although it has only been possible to test the strength of postulated sets of causal relations among variables with hindsight, we may start to understand why conflicts occur by identifying the relative weight of structural indicators.

Based on [Van de Goor/Verstegen 1999]

Credibility

Credibility refers to the objective and subjective components of the believability of a source or message (source credibility). Traditionally, as a power for inspiring belief, it has two key components: trustworthiness and expertise, which both have objective and subjective components. While trustworthiness is based more on subjective factors, but can include objective measurements such as established reliability, expertise can be similarly subjectively perceived, but also includes relatively objective characteristics of the source or message (e.g., credentials, certification or information quality). Hence, credibility is context-dependent, and an expert in one situation may be less competent in another. Secondary components of credibility include source dynamism (charisma), physical attractiveness, and the absence of factors that reduce credibility (e.g., indication of hesitation, excessive exaggeration). Thirdly, attributes of a perceiving person have influence on credibility, e.g., education, credulity.

Based on Self in [Salwen/Stacks 1996], pp. 421-441.; http://www.merriam-webster.com/dictionary/credibility, http://en.wikipedia.org/wiki/Credibility, and http://changingminds.org/explanations/theories/credibility.htm, all seen 28 July 2010

Decision-Making

Decision-making denotes the cognitive process of reaching a decision. There are two main types of mental processing an individual can do to reach a decision about a problem at hand. The first type of processing is called systematic processing. Systematic processing involves in depth analysis and scrutiny of all stimuli in the environment (including the persuasive arguments of others). The second type of mental processing is called heuristic processing, which involves taking mental shortcuts or "rules-of thumb" to come to a decision. A very popular heuristic that many people often take is the "like-agree" heuristic that leads people to make the same decision as people that they like did.

Based on [www.hyperdictionary.com; www.alleydog.com Psychology Glossary]

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Early Warning

Early warning refers to monitoring and analysis of early signals of potential conflict, with a view to anticipating trouble spots in time to respond effectively.

Based on [DFID 2002]

Effect

An effect is the physical and/or behavioural state of a system that results from an action or set of actions.

Based on [USJFCOM 2006]

Evaluation

Evaluation is the systematic and objective assessment of an on-going or completed project, programme or policy, its design, implementation and results. The aim is to determine the relevance and fulfilment of objectives, [development] efficiency, effectiveness, impact, sustainability. An evaluation should provide information that is credible and useful, enabling the incorporation of lessons learned into the decision–making process.

Based on [OECD/DAC 2008]

Framing

Media reveal certain aspects of reality by selection, salience, emphasis and exclusion. Thus recipients establish a certain view and way of interpretation on problems, contents, messages or information. Frames make it easier to the audience to receive and process mass information spread by mass media because they provide possible causal interpretations, definitions and moral evaluations.

Based on [Bryant/Oliver 2009]

Greed

Greed refers to opportunities for predatory accumulation during conflict, particularly by political elites.

Based on [DFID 2002]

Grievance

Refers to the negative reactions of those who are disadvantaged (e.g. through political and social exclusion, bad governance, religious or ethnic marginalisation etc.).

[DFID 2002]

Human Security

Human security signifies not only protection from violence but also from wider threats to physical well being and livelihoods such as environmental degradation, disease and economic collapse.

Based on [DFID 2002]

Impact

Impact subsumes the actual effects of an intervention, both intended and unintended, on the lives of its beneficiaries and other stakeholders beyond the immediate project outputs.

Based on [DFID 2002]

Impact refers to the consequence of an outcome (ex. wider dialogue, better citizen-government links).

Based on [Brusset 2010]

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Impact Assessment

Answers the question: how significant has been the difference we made? A method based on chains of effects that gives answers to management to come to an overall assessment of progress.

[Brusset 2010]

Indicator

Indicators measure what actually happens against what has been planned in terms of quantity, quality and timeliness. An indicator is a quantitative or qualitative variable that provides a simple and reliable basis for assessing achievement, change or signal that reveals progress (or lack thereof) towards objectives.

Based on [UNDP 2002]

Indicator System

No indicator system could accommodate all of the potentially important indicators identified by […] a comprehensive process and still remain manageable. The second step, then, is to develop a valid, useful, and parsimonious set of indicators. The purposes the indicator system serves (e.g., description of trends, information for accountability purposes) constitute one criterion for reducing the initial pool of potential indicators. System designers need to consult potential users to determine what those purposes should be, because the purposes will dictate the type of information that must be collected and the level to which it should be disaggregated.

[Shavelson et al. 1991]

Information

In the information sciences information is an assembly of data in any medium or form capable of communication and use by assigned meaning through known conventions used in symbolic representation.

Based on [USJFCOM 2006]

In a broader sense information denotes knowledge communicated concerning some particular fact, subject or event.
[Merriam-Webster's Online Dictionary] http://www.merriam-webster.com/dictionary/information, seen 28 July 2010

Information Activity

An action designed to have an effect in the information environment, performed by any actor.
[MNE6 FC 2010]

Information Environment

The virtual and physical space, in which information is received, processed and conveyed. It consists of the information itself and information systems.
[MNIOE 2008]

Information Objective

An information objective describes the desired condition to be created in the information environment. It should be measurable to enable analysis, planning, execution/management and assessment / evaluation of related actions and effects.
Based on [MNE6 FC 2010]

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Information Strategy

The information strategy forms the interagency and multinational approach to crisis/conflict prevention and resolution in the information environment. It constitutes mission-specific strategic and political guidance for information activities across all levers of power in support of mission objectives.

Based on [MNE6 FC 2010]

Information System

An information system is a socio-technical system for the collection, processing and dissemination of information. It comprises personnel, technical components, organisational structures, and processes that create, collect, perceive, analyse, assess, structure, manipulate, store, retrieve, display, share, transmit and disseminate information.

Based on [MNIOE 2008]

Input

The financial, human and material resources used for the activity or intervention.

[DCDC CIP/CIME 2008]

Integrated Marketing Communication

(1) The process of developing and implementing various forms of persuasive communication programs with customers and prospects over time.

(2) A strategic business process used to plan, develop, execute, and evaluate coordinated, measurable, persuasive brand communication programs over time with consumers, customers, prospects, and other targeted individuals.

(3) A dynamic, holistic approach, integrated into all [ ] levels of an organisation. It manages and fuses every point of contact between the organisation and its stakeholders. Through its coordinated efforts it supports a targeted, integrated, consistent brand communication strategy for the purpose of building positive lifetime relationships through data-driven techniques, by customer-conscious employees ultimately giving an organisation a competitive advantage and brand equity.

[MNE6 FC 2010]

Intervention Theory

It is not about: did X cause Y, but to what extent did the intervention contribute to the process of change.

[Brusset 2010]

Involvement

In the context of persuasion theory involvement has been generally defined as thoughts relating personal experience and message content or as links between information presented and central values. Theory has identified different types of involvement that occur in different contexts: (1) Involvement due to personal consequences related to the topic of a message (issue involvement). (2) Involvement arising from message context that impinges on personal values systems (value relevant involvement). (3) Involvement resulting from the possibility of social interactions related to message content (impression relevant involvement). These types may be mapped onto three basic human motivations: The motivation to understand reality, the motivation to achieve a positive and coherent self-concept and the motivation to relate to other people and convey an appropriate impression to them.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Involvement describes a psychological state that consists of arousal induced by an association between an attitude and the self-concept and is as a motivational determinant relevant to attitude formation theories like ELM and HSM.

Based on [Slater 2002] and [Albarracín et al. 2005]

Interest

Interest is a feeling that accompanies or causes special attention to an object or class of objects, or an event or a process. In contemporary psychology of interest, the term is used as a general concept that may encompass other more specific psychological terms, such as curiosity and to a much lesser degree surprise.

*Based on [http://www.merriam-webster.com/dictionary/interest ,
http://en.wikipedia.org/wiki/Interest_%28emotion%29, both seen 2 August 2010]*

Issue of Concern

Issue of Concern means a point or matter of discussion, debate or dispute that is of perceived particular importance to relevant actors.

[IABG 2010]

Knowledge

Knowledge is a human faculty resulting from interpreted information or the theoretical or practical understanding of a subject. Knowledge is a result of facts, information, and skills acquired through experience or education. It is an understanding that germinates from combination of data, information, experience, and individual interpretation. The state or fact of knowing covers all that has been perceived or grasped by the mind. As a justified belief or certain understanding it is opposed to opinion.

*Based on http://www.businessdictionary.com/definition/knowledge.html,
http://www.yourdictionary.com/knowledge, both seen 3 August 2010*

Latent Conflict

Latent conflict refers to potential sources of tension which could emerge as violent conflict.

Based on [DFID 2002]

Measure of Effectiveness (MOE)

A criterion used to evaluate how system behaviour has been affected by actions or capabilities; also tied to effects and effects assessment.

Based on [USJFCOM 2006]

Measure of Performance (MOP)

A criterion used to evaluate the results of actions; also tied to actions and actions assessment.

Based on [USJFCOM 2006]

Media Bias

Media bias constitutes the violation of a set of standards in media coverage that characterize objectivity. Objectivity comprises the adherence to factuality that is truth and relevance and to impartiality.

Media bias is present if there is a regular trend in media content that is volitional, teleological, threatening to conventional values and sustained.

Volitional implies that the media content is deliberately skewed as opposed to accidentally. *Teleological* points to the fact that media bias is done for a reason and is not pointless. The

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

underlying perception is that media are biased to whatever extent to advance one or more of the media outlet's goals. *Threatening to conventional values* excludes radical and reactionary viewpoints that are too extreme to lead to much consequential persuasion. *Sustained* prohibits a diagnosis of media bias based on a single story. Media bias is consistent and persistent across time.

Based on [D'Alessio/Allen 2007]

Medium

In the broadest sense a medium is a carrier of information.

In communication, a medium is the storage and transmission channel or tool used to store and deliver information or data. The plural term media is often referred to as synonymous with mass media or news media, but may also refer to a single medium used to communicate any data for any purpose. Mass media denote a section of media specifically designed to reach a large public audience.

[IABG]

Mental Model

A mental model is an explanation of someone's thought process about how something works in the real world. It is a representation of the surrounding world, the relationships between its various parts and a person's intuitive perception about their own acts and their consequences. Mental models can be constructed from perception, imagination, or the comprehension of discourse. They underlie visual images, but they can also be abstract, representing situations that cannot be visualised. Our mental models help shape our behavior and define our approach to solving problems (akin to a personal algorithm) and carrying out tasks. Mental models are (i) incomplete and constantly evolving, (ii) usually not accurate representations of a phenomenon (they typically contain errors and contradictions), (iii) parsimonious and provide simplified explanations of complex phenomena, (iv) often contain measures of uncertainty about their validity that allow them to be used even if incorrect.

Based on http://www.tcd.ie/Psychology/other/Ruth_Byrne/mental_models/,
http://en.wikipedia.org/wiki/Mental_model#Mental_model_in_relation_to_the_system_dynami
cs_and_systemic_thinking, http://tip.psychology.org/models.html, all seen 2 August 2010

Metric

A metric is a standard of measurement by which efficiency, performance, progress, or quality of a plan, process, or product can be assessed in measurable (often quantifiable) terms.

Based on [BD 2010]

Monitoring

A continuing function that uses systematic collection of data on specified indicators to provide management and the main stakeholders of an ongoing [development] intervention with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds.

[OECD/DAC 2008]

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Monitoring is at the heart of good performance management. Monitoring processes reveal how a programme is progressing and can not only encourage the re-calibration of programmes as conflict contexts shift, they can also make an evaluation easier to conduct and more in-depth. […] Monitoring should, therefore, be developed as a central pillar of any programmatic or project-level investment. Monitoring involves training, information collection and management, analysis and communication.

[OECD/DAC 2008a]

Objective

An objective is a clearly defined and attainable goal in the operational environment that is essential to military commanders' plans and towards which the operation is directed. Objectives are achieved by the outcome of an aggregation of intended effects and are derived from the end state. Their completion should lead to the achievement of the end state.

[MNE6 FC 2010]

Ontology

Ontologies formulate an exhaustive and rigorous conceptual schema within a given domain. Although these are typically hierarchical data structures containing all the relevant entities, they are not necessarily trees. In addition to entities, ontologies contain relationships and rules (such as theorems and regulations) within those domains. Ontologies capture the meaning of the underlying concepts.

[Tolk et al. 2006]

Open Conflict

Open conflict refers to ongoing challenges and disputes; actual, violent conflict.

Based on [DFID 2002]

Outcome

An outcome subsumes the intended or achieved short-term and medium-term effects of an intervention's outputs, usually requiring the collective effort of partners. Outcomes represent changes in environmental conditions which occur between the completion of outputs and the achievement of strategic objectives.

Based on [DCDC CIP/CIME 2008]

Output

The immediate result, product, goods or services that result from an activity. The output may be physical or more cognitive affecting attitudes and behaviour. The actual outcome of the activity may however not be as intended due to inaccurate information, false assumptions and the impact of external influences.

Based on [DCDC CIP/CIME 2008]

Peace-building

Peace-building refers to action undertaken over the medium and longer term to address the structural bases of violent conflict.

Based on [DFID 2002]

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Peace and Conflict Impact Assessment (PCIA)

Methodologies and tools to assess the likely impacts (positive and negative) that development interventions might have on the conflict dynamics at the country, region or project levels.

[DFID 2002]

Perception

Perception is the process by which organisms translate sensory stimulation of receptors into a meaningful experience of the world. It typically involves interpretation and further processing of sensory input. Though necessarily based on incomplete and unverified (or unreliable) information, perception is 'the reality' and guides human behaviour in general.

Based on http://www.sapdesignguild.org/resources/optical_illusions/intro_definition.html and http://www.businessdictionary.com/definition/perception.html

Phases of Conflict in the Conflict Circle

According to Sida's terminology, conflict is conceived of as a circle consisting of different phases that can reoccur unless the circle is broken. The phases are: submerged tension, rising tension, violent conflict and post-conflict. The goal of activities promoting peace and security is to escape the vicious circle.

[SIDA 2006]

Priming

Perceived media contents may have effects on recipients' opinion building or they might even manipulate their behaviour. Primes are the media contents of mass communication. Priming refers to effects certain media contents have on the appraisal of things, persons or occurrences, which are in close coherence to that content.

Based on [Bryant/Oliver 2009]

Promotion of Peace and Security

Includes all activities, within the specific framework of development co-operation, that consciously target the attitudes and behaviour of parties to a conflict as well as the structural instability, and that have the primary or secondary goal of increasing security, preventing violent conflict or contributing to its resolution. There are three types of activities: promoting dialogue, promoting security and promoting structural stability.

[SIDA 2006]

Response Model

A somewhat contrasting approach to the development of explanatory-predictive models is by emphasizing how these models are put to policy use, irrespective of testing, in order to anticipate on alternative responses. The logic behind this model is that in order to demonstrate the value of the early warning system you should not test the model. Rather, one should evaluate the response to intervention, since one is dealing with an interactive system that is emerging dynamically from warning and response. Cause-effect relationships need to be identified to such an extent for the user to be confident that a given policy activity will likely reinforce or offset any given combination of factors. In order to intervene effectively, the importance of good analysis remains.

Based on [Van de Goor/Verstegen 1999]

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Result

A result is a describable or measurable change in state that is derived from a cause and effect relationship. Results are the same as outcomes but are further qualified as immediate, intermediate, or ultimate.

Based on [CIDA 2008]

Results-Based Management (RBM)

A management strategy or approach by which an organization ensures that its processes, products and services contribute to the achievement of clearly stated results. Results-based management provides a coherent framework for strategic planning and management by improving learning and accountability. It is also a broad management strategy aimed at achieving important changes in the way agencies operate, with improving performance and achieving results as the central orientation, by defining realistic expected results, monitoring progress toward the achievement of expected results, integrating lessons learned into management decisions and reporting on performance. (The terms 'outcome-orientation' or 'effects-based thinking' are also used for referring to results-based philosophy.)

Based on [UNDP 2002]

Results-Based Management essentially requires that planners and implementers carefully articulate performance and outcome indicators. The approach is frequently linked to the use of logical frameworks. In some cases, a results chain, together with a logframe, may be adopted to allow for longitudinal measurement.

[OECD/DAC 2008a]

Rising Tension

Rising tension refers to a situation in which grievances increasingly are accompanied by violent demonstrations and open protests. Often an open political power struggle is underway, and political violence has increased. The situation often includes gross violations of human rights and/or threats of violence. This situation entails the risk of armed conflict.

[SIDA 2006]

Rules-based/De Jure Indicators vs. Outcome-Based Indicators

To illustrate this distinction consider possible alternative measures of corruption. At the one extreme of rules-based indicators we can measure whether countries have legislation that prohibits corruption, or whether an anticorruption agency exists. But we can also measure whether in practice, the laws regarding corruption are enforced, or whether the anticorruption agency is undermined by political interference. And going one step further one can collect information on the views of firms, individuals, NGOs, or commercial risk rating agencies regarding the prevalence of corruption in the public sector.

[Kaufmann/Kraay 2007]

Security Dilemma

The security dilemma is a mechanism through which fear can lead to violent conflict or war. In a security dilemma, two sides are mutually vulnerable and fearful and, as a result, may contemplate or even initiate pre-emptive strikes, though their differences in terms of incompatible goals are manageable. It is one of the two main mechanisms driving armed conflict, the other being the power struggle.

[SIDA 2006]

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Security Environment

The security environment is a complex political-military web of regional, cultural, and political competitions and conflicts, involving threats to vital interests posed by a variety of actors.
Based on [MNIOE 2008]

Security Sector

State institutions which have a formal mandate to ensure the safety of the state and its citizens against acts of violence and coercion (e.g. armed forces, police, the intelligence and similar bodies), and the elected and/or duly appointed civil authorities responsible for control and oversight of these institutions (e.g., Parliament, the Executive, including the defence ministry, judicial and penal systems).
[MNE6 FC 2010]

Security Sector Reform

A security sector reform orchestrates measures taken to assist in making the security sector more accountable to civilian democratic authorities and ensuring greater transparency of security sector expenditure. Assistance also includes training of security forces for their proper role in democratic society including respecting human rights and humanitarian law.
Based on [DFID 2002]

Sensation

Sensation comprises the impulse of stimulated sensory receptors of and its interpretation by an organism. From making use of this interpretation perception originates.
Based on [AlleyDog.com: http://www.alleydog.com/glossary/definition.cfm?term=Sensation]

Sequential Model

A sequential model tries to track more precisely when tense and high-risk situations – as indicated by structural conditions – are likely to erupt into crisis, thus adding time-sensitivity to risk assessments. So-called accelerators visualize this time-sensitivity. Analysis of these accelerators enables tracking the flow and sequence of events that can trigger a conflict. The sequential models thus also look at the dynamics of the conflict process by making a clear distinction between background conditions, intervening conditions and accelerators. They are, therefore, suited to tracking crisis situations as they evolve over time, and assessing the likelihood that particular events will (not) lead to conflict.
Based on [Van de Goor/Verstegen 1999]

Situational Awareness/Situational Understanding (SA/SU)

Situation[al] Awareness is the perception of the elements in the environment within a volume of time and space, the comprehension of their meaning, and the projection of their status in the near future. ... Situation[al] Awareness provides the primary basis for subsequent decision-making and performance in the operation of complex, dynamic systems... At its lowest level the operator needs to perceive relevant information (in the environment, system, self, etc.), next integrate the data in conjunction with task goals, and, at its highest level, predict future events and system states based on this understanding.
[Endsley 1988]

Socio-technical System

A socio-technical system is an organised set of human beings and technologies, structured in a manner to produce specific output. It is composed of social and technical components (sub systems). The sub systems are inseparable and interact based on various

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

dependencies. Due to the social components the behaviour of a socio-technical system is not deterministic.

Derived from [Ropohl 1999], [Sydow 1995], and [Trist/Bamforth 1951]

Stakeholder

A stakeholder is an actor with an interest in particular problems or subjects and possibilities to exert corresponding influence.

[IABG]

Strategic Communication

Focused [coalition] efforts to understand and engage key audiences to create, strengthen, or preserve conditions favourable for the advancement of [coalition] interests, policies, and objectives through the use of coordinated programs, plans, themes, messages, and products synchronized with the actions of all [coalition partners].

[MNE6 FC 2010]

Structural Instability

When one or several serious conflict motives, such as poverty, economic inequality, ethnic discrimination or lack of democracy, are present in a society, that society is afflicted by structural instability. In other words, the society contains conflict motives that could be embraced and contested by force, leading to violent conflict or war.

[SIDA 2006]

Structural Stability

Structural stability, in contrast to structural instability, is defined as social peace, respect for the rule of law and human rights, social and economic development, supported by dynamic and representative political institutions capable of managing change and resolving disputes without resorting to violent conflict.

Based on [SIDA 2006]

A situation involving sustainable economic development, democracy and respect for human rights, viable political structures, healthy social and economic conditions, with the capacity to manage change without resorting to violent conflict.

[DFID 2002]

Struggle for Power and Influence

A mechanism by which ambition, grievance or greed can lead to violent conflict or war. It can be defined as incompatible positions plus military overconfidence. It entails a situation in which the parties to a conflict not only differ greatly on one or more issues (incompatibility is great) but also hold divergent expectations about the likely outcome of a violent confrontation, so that at least one side is underestimating its adversary's relative strength. The power struggle is one of the two main mechanisms driving violent conflict, the other being the security dilemma.

[SIDA 2006]

Submerged Tension

Submerged tension refers to underlying conflict motives, which can be caused by structural instability in a country or region. These often appear as greed or grievances from various population groups and elites in the society. In the long run, these grievances can increase the risk of political instability and armed conflict.

[SIDA 2006]

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Summative Evaluation

A study conducted at the end of an intervention (or a phase of that intervention) to determine the extent to which anticipated outcomes were produced. Summative evaluation is intended to provide information about the worth of the programme.

[OECD/DAC 2008a]

System

A system consists of independent but interrelated components/elements constituting a coherent entity/unified whole. A system may again consist of systems, called 'subsystems'. 'System elements' are considered subsystems not further decomposed for the purpose of analysis. Thus, the designation of a system as a system, subsystem, or system element depends on the analytical viewpoint and level of aggregation.

Based on [MNIOE 2007]

Systems Analysis (Systemic Analysis)

Systems Analysis is a method which defines a network of elements, their relations and interactions, evolving in space and time, and thus allows a valid contextual assessment of objectives, sequences of effects and chains of actions. The result of Systems Analysis is a comprehensive modelling of the operational environment with its system dynamics and feedback loops. Systems Analysis provides a description of effects and exposes both intended and unintended consequences.

[DEU KD 2007]

Taxonomy

Taxonomies are a tree structure of classifications for a given set of objects. At the top of these structures are single classifications, which are the root nodes that apply to all objects. Nodes below these roots are more specific classifications that apply to subsets of the total set of classified objects. The main purpose is the classification of terms. The higher a term, the more universal it is; that means that leaves are the most specific term of taxonomies. Taxonomies are the first form reflecting the idea of concepts.

[Tolk et al. 2006]

Theory of Change (TOC)

A theory of change subsumes the assumptions that link a program's inputs and activities to the attainment of desired ends. Forms a set of beliefs about how and why an initiative will work to change the conflict. It includes both implementation theory and programme theory.

Based on [OECD/DAC 2008a]

Track one (or 'First Track') Diplomacy

Official governmental international efforts to settle a dispute or conflict.

[DFID 2002]

Track two (or 'Second track') Diplomacy

Unofficial confidence-building meetings and actions in support of Track 1. Often private efforts by non-state actors (religious, academic, NGO or other groups) to achieve progress in peace negotiations.

[DFID 2002]

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Triangulation

Triangulation describes the use of multiple theories, methods and/or data sources to verify and substantiate an assessment. It is used to overcome the biases that come from unitary disciplines, single observers, self interested informants and partial methods.

Based on [OECD/DAC 2008a]

Trigger

Triggers are immediate events that accelerate the outbreak of conflict (e.g. the assassination of a political leader).

Based on [DFID 2002]

Trustworthiness

Trustworthiness summarises the audience's perceptions of the source's intentions and its attributions of the communicator's behaviour

[Perloff 1993]

Trustworthiness is the perceived motivation of a source to tell the truth.

[IABG 2010]

Violent Conflict

Incompatibilities or differences between groups of people that result in organized violence. This can range from violent confrontations and manifestations in society, such as violent riots and massive crackdowns on protestors, to wars, genocide and massacres.

[SIDA 2006]

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Abbreviations

AC	Analytical Concept
AJP	Allied Joint Publication
ApC	Applied Concept
APRM	African Peer Review Mechanism
ASD	Actor System Dynamics
AU	African Union
BAS	Baseline Assessment Statement
BTI	Bertelsmann Transformation Index
C2S	Command and Control System
CAF	Conflict Assessment Framework
CAS	Complex Adaptive System
CD&E	Concept Development and Experimentation
CIMA	Conflict Impact Assessment
CIS	Communication and Information System
CMM	Office of Conflict Management and Mitigation (USAID)
EBAO	Effects-Based Approach to Operations
ELM	Elaboration Likelihood Model
EWS	Early Warning System
FC	Framework Concept
FEWER	Forum for Early Warning and Early Response
FGD	Focus Group Discussion
GQ	Guiding Question
Grp InfoOp	Gruppe Informationsoperationen
GTZ	Gesellschaft für Technische Zusammenarbeit (DEU)
HSM	Heuristic Systematic Model
IABG	Industrieanlagen-Betriebsgesellschaft
IC	International Community
ICD	Information and Communication for Development
ICT	Information and Communication Technology
IDRC	International Development Research Centre (Canada)
IE	Information Environment
Info Ops	Information Operations
IM&EF	Integrated Measuring and Evaluation Framework
IPDC	International Programme for the Development of Communication (UNESCO)
IPI	International Press Institute
KABP	Knowledge, Attitudes, Behaviour and Practice
KAP	Knowledge, Attitudes and Practice
KD	Knowledge Development
LL	Lessons Learned
M&E	Measuring and Evaluation
M&EF	Measuring and Evaluation Framework
ML	Media Landscape
MM	Mass Media
MNE	Multinational Experiment
MNIOE	Multinational Information Operations Experiment
MoE	Measure of Effectiveness
MoP	Measure of Performance
NEPAD	New Partnership for Africa's Development
OECD	Organisation for Economic Co-operation and Development
OEF	Operation Enduring Freedom

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

OIF	Operation Iraqi Freedom
OMA	Office of Military Affairs (USAID)
PCA	Peace and Conflict Assessment
PCIA	Peace and Conflict Impact Assessment
PEER	Participatory Ethnographic Evaluation and Research
PMESII	Political, Military, Economic, Social, Infrastructure, and Information
PM&E	Participatory Monitoring and Evaluation
PRA	Participatory Rural Appraisal
PRCA	Participatory Rural Communication Appraisal
RAP	Rapid Assessment Procedures
RBM	Results-Based Management
SA/SU	Situational Awareness / Situational Understanding
SADC	Southern African Development Community
SCA	Strategic Conflict Assessment
TBD	To Be Defined
TOC	Theory of Change
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
USAID	United States Agency for international Development
USIP-FFP	United States Institute of Peace-Food For Peace
USJFCOM	United States Joint Forces Command
ZOpInfo	Zentrum für Operative Information

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Bibliography

[Albarracín et al. 2005] Albarracín, Dolores; Johnson, Blair T.; Zanna, Mark P. (Eds): The Handbook of Attitudes. Lawrence Erlbaum Associates: Mahwah, New Jersey; London, 2005.

[Alberts 2006] Alberts/Hayes: Understanding Command and Control, 2006.

[Answers.com 2009] Answers.com: Adaptive System. Internet: http://www.answers.com/topic/adaptive-system, seen 18 September 2009.

[articleworld AST 2009] ArticleWorld Pte. LTD: Agenda Setting Theory. Internet: http://www.articleworld.org/index.php/Agenda_setting_theory, seen 14 September 2009.

[Baker/Russell 2001] Baker, Pauline H.; Russell, Anne V.: Redefining Diplomacy: New Actors, Tools and Strategies. - The Fund for Peace: Washington, DC, 2001. - Internet: http://www.fundforpeace.org/publications/reports/redefining_diplomacy.pdf, seen 05 November 2009.

[BD 2010] Business Dictionary, http://www.businessdictionary.com.

[Berghof HB/Austin 2004] Austin, Alexander: Early Warning and The Field: A Cargo Cult Science? - Berghof Research Center for Constructive Conflict Management - Edited Version Aug 2004 (First launch Feb 2003). Internet: http://www.berghof-handbook.net/uploads/download/austin_handbook.pdf, seen 18 September 2009.

[Bertalanffy 2003] Bertalanffy, Ludwig von: General System Theory. Foundations, Development, Applications. – Fourteenth paperback printing. - Copyright 1968 by Ludwig van Bertalanffy. - George Braziller: New York, 2003.

[Brettschneider MT 2009] Brettschneider, Frank: Grafik "Agenda Setting". University Höhenheim, Germany. No date. – Cited on Media Tenor International: Agenda Setting Theorie. Zürich, 2009. Internet: http://www.mediatenor.de/smi_AS_approach.php, seen 19 September 2009.

[Brusset 2009] Brusset, Emery: Four Rules Of The Art - And some Poking Around for Practical Solutions to the Challenges of Joint Peace Intervention Evaluations. - NUPI/IPI Workshop, New York. - 7 & 8 May 2009. - Channel Research.

[Brusset 2010] Brusset, Emery: Impact Assessment: Concepts & Challenges from International Cooperation. - Briefing at MNE 6 Objective 3.1 WS 3, 15-19 February, École Militaire, Paris. - Channel Research: Lasne (South of Brussels), Belgium, 2010.

[Bryant/Oliver 2009] Bryant, Jennings; Oliver, Mary Beth: Media Effects - Advances in Theory and Research.- Routledge: New York, 2009.

[BTI 2008] Bertelsmann Stiftung; Center for Applied Policy Research: Bertelsmann Transformation Index 2008. Manual for Country Assessments. Gütersloh, 2007 (16 November 2007).

[BTI 2010] Bertelsmann Stiftung: Transformation Index 2010. Political Management in International Comparison. - Gütersloh: 2009. - Internet: http://www.bertelsmann-transformation-index.de/fileadmin/pdf/Anlagen_BTI_2010/BTI_2010__Brochure_E_web.pdf, seen 9 March 2010.

[Checkland 1981] Checkland, Peter B.: Systems Thinking, Systems Practice. - Wiley: Chichester, 1981.

[CIDA 2008] Canadian International Development Agency, Results-based Management – 2008 Policy Statement: Amended terms and definitions, 2008, http://acdi-cida.ca/CIDAWEB/acdicida.nsf/En/ANN-102094249-J4B accessed 2009-06-22, seen June2009.

[Clingendael SAF 2005] Verstegen, Suzanne; van de Goor, Lux; de Zeeuw, Jeroen: The Stability Assessment Framework: Designing Integrated Responses for Security, Governance and Development. Prepared by the Clingendael Institute for the Netherlands Ministry of Foreign Affairs. Ministry of Foreign Affairs: The Hague, January 2005.

[Couture 2007] Couture, Mario: Complexity and Chaos – State-of-the-Art; Overview of Theoretical Concepts. DRDC/RDDC Valcartier, TN 2006-453. Defence R&D Canada, Valcartier, Quebec, Canada, August 2007.

[D'Alessio/Allen 2007] D'Alessio, Dave; Allen, Mike: On the Role of Newspaper Ownership on Bias in Presidential Campaigns Coverage by Newspapers. In: Raymond W. Preiss et al. (Eds.), Mass media effects research: advances through meta-analysis. Lawrence Erlbaum Associates Inc., Mahwah NJ, 2007.

[DCDC CIP/CIME 2008] GBR Development, Concepts and Doctrine Centre (DCDC) / USJFCOM-J9: Cooperative Implementation Planning, Management and Evaluation – Outline Concept, Draft for Coordination, Version 3.0, 01 October 2008.

[DCDC JDP01] GBR Development, Concepts and Doctrine Centre (DCDC): Joint Doctrine Publication 01 (JDP 01) – Campaigning, 2nd Edition, December 2008.

[DCDC JDP5-00] GBR Development, Concepts and Doctrine Centre (DCDC): Joint Doctrine Publication 5-00 (JDP 5-00) – Campaign Planning, 2nd Edition, December 2008.

[DEU KD 2007] DEU Bundeswehr Centre for Transformation: Framework Concept for Knowledge Development, Draft Version 1.0, 12 January 2007.

[DFID 2002] Department for International Development (DFID): Conducting Conflict Assessments: Guidance Notes. January 2002.

[DFID ICD 2005] Myers, Mary: Monitoring and Evaluating Information and Communication for Development (ICD) Programmes: Guidelines. - Department for International Development (DFID): London, March 2005.

[Dictionary.com 2009] Dictionary.com Unabridged: Benchmark. - Based on the Random House Dictionary, Random House, Inc. 2009. Internet: http://dictionary.reference.com/browse/benchmark, seen 18 September 2009.

[Dillard/Pfau 2002] Dillard, James, Price; Pfau, Michael (Eds.): Persuasion Handbook. Developments in Theory and Practice. SAGE Publications: Thousand Oaks et al., 2002.

[Eagly/Chaiken 1993] Eagly, Alice H.; Chaiken Shelley: The psychology of attitudes. Harcourt Brace Jovanovich. Fort Worth, 1993.

[Eagly/Chaiken 2005] Eagly, Alice H.; Chaiken Shelley: Attitude Research in the 21st Century: The Current State of Knowledge: in [Albarracín et al. 2005]

[Endsley 1988] Endsley, M.: Design and Evaluation for Situation Awareness Enhancement; Santa Monica, 1988.

[ENoP AMB 2009] European network of political foundations (ENoP): The African Media Barometer (AMB). - Poster. - 15 October 2009. - Internet: http://www.google.de/url?sa=t&source=web&ct=res&cd=2&ved=0CBIQFjAB&url=http%3A%2F%2Fwww.european-network-of-political-foundations.eu%2Fcms%2Findex.php%2Feng%2Fcontent%2Fdownload%2F235%2F1635%2Ffile%2FFES%2520-%2520Africa.pdf&ei=IXD9StfSIMnK_gagoqWLCw&usg=AFQjCNFR_7_puGldZoKQrnykqULg4r4CTg

[Eoyang/Berkas 1998] Eoyang, Glenda H.; Berkas, Thomas H.: Evaluation in a Complex Adaptive System. Chaos Limited, Circle Pines, MN; Search Institute, Minneapolis, MN: April 30, 1998. Internet: http://www.chaos-limited.com/EvalinCAS.pdf, seen 18 September 2009.

[FES AMB 2005] Schellschmidt, Peter: The African Media Barometer (AMB) - A new instrument in media development cooperation. Friedrich Ebert Stiftung (FES): November 2005.

[FES AMB 2007] Schellschmidt, Peter: Das African Media Barometer. - Ein Instrument zur Selbsteinschätzung der Freiheit von Meinung und Medien in Afrika. - Januar 2007. Internet: http://library.fes.de/pdf-files/iez/04252.pdf, seen 13 November 2009.

[FES AMB 2008] N.N.: African Media Barometer. - The first home-grown analysis of the media madscape in Africa. - Grahamstown, RSA, 07 September 2008. - Internet: http://www.google.de/url?sa=t&source=web&ct=res&cd=6&ved=0CCsQFjAF&url=http%3A%2F%2Fwww.rjr.ru.ac.za%2Frjrpdf%2Frjr_no26%2FAMB%2520South%2520Africa.pdf&ei=IXD9StfSIMnK_gagoqWLCw&usg=AFQjCNHoc7uJDVV_pqrhzlfyaraJgccgxw, seen 13 November 2009.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

[FES PCIA 2007] Friedrich-Ebert-Stiftung (FES): Peace and Conflict Impact Assessment. Annex. 2007.

[FES TB4 2004] Bussiek, Christel; Bussiek, Hendrik : The Media: Making Democracy Work. - Toolbox 4: Access to Information. - Friedrich-Ebert-Stiftung. Media Project Southern Africa: Windhoek, Namibia, 2004 - Internet: www.fesmedia.org.na.

[FfP CAST Analytical Model 2006] Baker, Pauline H.: Conflict Assessment System Tool (CAST). An Analytical Model for Early Warning and Risk Assessment of Weak and Failing States. - The Fund for Peace: Washington, DC, 2006. - Internet: http://www.fundforpeace.org/cast/pdf_downloads/castmanual2007.pdf, seen 05 November 2009.

[FfP CAST Indicators 2008] The Fund for Peace: Indicators & Their Measures. A Supplement to the Conflict Assessment System Tool (CAST). Manual. - The Fund for Peace: Washington, DC, 19 October 2008. - Internet: http://www.fundforpeace.org/cast/images/pdf/measures2008-10.pdf, seen 05 November 2009.

[FfP CAST Methodology 2006] The Fund for Peace: CAST Methodology. - The Fund for Peace: Washington, DC, 2006. - Internet: http://www.fundforpeace.org/web/index.php?option=com_content&task=view&id=107&Itemid=145, seen 05 November 2009.

[FfP CAST Report 2001] The Fund for Peace: African Perspectives on Military Intervention Conference Summary. - Ffp Reports Number 1, December 2001. - The Fund for Peace: Washington, DC, 2001. - Internet: http://www.fundforpeace.org/publications/reports/ffpr-africa_conference_report.pdf, seen 05 November 2009.

[FfP CAST Uganda 2009] Haken, Nate (Associate at The Fund for Peace): Uganda Report. - Washington, DC: The Fund for Peace, 20 November 2009. Internet: http://www.liberiademocracywatch.org/pdf/uganda-report-feb-2009.pdf, seen 05 November 2009.

[FfP CAST UNLOCK 2009] The Fund for Peace: UNLOCK. - The Fund for Peace: Washington, DC, 2009. - Internet: http://www.fundforpeace.org/cast/index.php?option=com_content&task=view&id=40&Itemid=38, seen 05 November 2009.

[FfP CAST Spreadsheet n.d.] The Fund for Peace (Hendry, Krista?): Scoring Spreadsheet. - The Fund for Peace: Washington, DC, no date. - Internet: http://www.fundforpeace.org/cast/pdf_downloads/scoringspreadsheets.xls, seen 05 November 2009.

[Freedom House 2005] Freedom House, Inc.: Freedom in the World Survey. Freedom House, Inc.: Washington D.C., 2005. Reference: http://www.freedomhouse.org/template.cfm?page=35&year=2005, seen Fri, 7 Nov 2008.

[Freedom House 2008] Freedom House, Inc. : Freedom of Press. - Methodology. 2008 Edition. - Washington, D.C., No date. - Internet: http://www.freedomhouse.org/template.cfm?page=350&ana_page=348&year=2008, seen 12 February 2010.

[Früh 1980] Früh, Werner: Lesen, Verstehen, Urteilen. Untersuchungen über den Zusammenhang von Textgestaltung und Textwirkung. Karl Alber: Freiburg; München, 1980.

[Gilbert/Doran 1994] Gilbert, Nigel; Doran, Jim (Eds.): Simulating Societies. The computer simulation of social phenomena. University College London (UCL) Press: London, 1994.

[Goldstein 1999] Jeffrey Goldstein: Emergence as a Construct: History and Issues. Emergence: Complexity and Organization 1 (1), 49–72, 1999.

[GTZ 2001] Leonhardt, Manuela: Konfliktanalyse für die Projektplanung und -steuerung. - Eine praktische Handreichung – Draft - Deutsche Gesellschaft für technische Zusammenarbeit GmbH: Eschborn, August 2001.

[Hart 1981] Hart, Henry O.: A Study of Communications Flow Models and Social Change – Emergent Public Opinion in East Europe. East European Area, Audience and Opinion Research Department, RFE/RL, Inc.: June, 1981.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

[Hauptmeier 2010] Hauptmeier, Helmut: Projektbericht „MiA". - Medienwirkungsmessung in Afghanistan. Universität Siegen, 2010.

[Helmus et al. 2007] Helmus, Todd C.; Paul, Christopher; Glenn, Russell W.: Enlisting Madison Avenue. The Marketing Approach to Earning Popular Support in Theaters of Operation. - Prepared for the United States Joint Forces Command. Approved for public release, distribution unlimited. - 2007 RAND Corporation. - Filename: *RAND_MG607.pdf*.

[Holland 1994] John H. Holland in *Complexity: the emerging science at the edge of order and chaos*. Harmondsworth [Eng.], Penguin, 1994.

[Holland 1996] John H. Holland: Hidden Order: How Adaptation Builds Complexity. HarperCollins Canada, Perseus Books, 1996.

[ICAF 2008] N.N.: Principles of the Interagency Conflict Assessment Framework. - Reconstruction and Stabilization Policy Coordinating Committee (R&S PCC), 15 July 2008. - Internet: http://www.crs.state.gov/index.cfm?fuseaction=public.display&shortcut=CJ2R, seen 9 March 2008.

[International Alert RP 2006] International Alert: Conflict-sensitive approaches to development, humanitarian assistance and peace building: tools for peace and conflict impact assessment. - Resource Pack. - Internet: http://www.conflictsensitivity.org/node/8, seen 11 November 2009.

[Kaufmann/Kraay 2007] Kaufmann, Daniel; Kraay, Aart: Governance Indicators: Where Are We, Where Should We Be Going? - Policy Research Working Paper 4370. - The World Bank, World Bank Institute, Global Governance Group and Development Research Group, Macroeconomics and Growth Team: Washington, DC, 2007.

[Kaufmann et al. 2008] Kaufmann, Daniel; Kraay, Aart; Mastruzzi, Massimo: Governance Matters VII: Aggregate and Individual Governance Indicators 1996-2007. - Policy Research Working Paper 4654. - The World Bank, Development Research Group, Macroeconomics and Growth Team & World Bank Institute Global Governance Program: Washington, DC, June 2008.

[Kilcullen 2007] Kilcullen, David: Counterinsurgency in Iraq: Theory and Practice, 2007. - Noetic. – Filename: *kilcullencoinbrief26sep07.ppt*.

[Kreuzer/Gunzenhäuser 1965] Kreuzer, Helmut; Gunzenhäuser, Rul (Hrsg.): Mathematik und Dichtung. Versuche zur Frage einer exakten Literaturwissenschaft. Nymphenburger Verlagshandlung: München, 1965.

[Kroeber-Riel 1999] Kroeber-Riel, Werner; Weinberg, Peter: Konsumentenverhalten. 7. Auflage. Vahlen: München, 1999.

[KSA AC InfoStrat 2008] Kommando Strategische Aufklärung (KdoStratAufkl) - Gruppe Informationsoperationen (Grp InfoOp) - Westenkirchner, Peter E.: Analytical Concept. Development and Implementation of a Multinational Information Strategy. - Coordinated Draft Version 1.0 - Bonn, 04 July 2008.

[Lane 2006] Lane, Roger: The Command, Leadership and Management Challenges of Contemporary Multinational Command. In: The RUSI Journal, 151: 6, 30-34, 2006.

[Lasswell 1948] Lasswell, Harold D.: The Structure and Function of Communication in Society. In: Lyman Bryson (Ed.): The Communication of Ideas. New York: 1948.

[Leuchter/Schönbein 2006] Leuchter, S.;Schönbein, R.: Die Verwendung von Architectural Frameworks als Vorgehensmodell für die System-of-Systems-Entwicklung. In: C. Hochberger, R. Liskowsky (Hrsg.), INFORMATIK 2006. Informatik für Menschen. Beiträge der 36. Jahrestagung der Gesellschaft für Informatik e.V. (GI), 2. bis 6. Oktober 2006 in Dresden (Band 1, S. 669-675). Bonn: Gesellschaft für Informatik (LNI; P-93). Internet: http://www.safety-critical.de/doc/informatik2006.pdf.

[Media Tenor AS] Media Tenor International: Agenda Setting Theory. Zürich, no date. Internet: http://www.agendasetting.com/res_theory.php, seen 19 September 2009.

[Media Tenor 2005] Media Tenor: Strategy and Tactics of Agenda Surfing. How to profit from the popularity of current or emerging issues. 6th International Agenda Setting Conference, Lugano, 02.12.2005. Source: Media Tenor 04/28, 06/07/2005.

[Media Tenor 2009] Media Tenor International: Agenda Setting Theorie. Zürich, 2009. Internet: http://www.mediatenor.de/smi_AS_approach.php, seen 19 September 2009.

[Mittelstrass 2003] J. Mittelstrass, Jürgen: Science as Utopia. - In: Science and the Future of Mankind, pp. 496-500. Vatican City. - Internet: http://www.vatican.va/roman_curia/pontifical_academies/acdscien/documents/sv%2099(5of5).pdf, URL accessed 18 August 2010.

[MNE6 AAF 2010] Rist, Ulfert: On the Development of a Generic Analysis and Assessment Framework. IABG Briefing at MNE 6 Obj. 3.1 WS3, Paris, 15-19 February 2010.

[MNE6 BA 2008] MNE6 Baseline Assessment Report, October 2008.

[MNE6 CDD 2009] MNE6 Campaign Design Document, 23 June 2009.

[MNE6 FC 2010] MNE6 Framework Concept Integrated Communication in Multinational Coalition Operations within a Comprehensive Approach. Third Draft Version 1.0, Strausberg, 22 October 2010.

[MNE6 GAP 2010] MNE6 Guide for Force Commanders for Assessing Progress in Environments involving Irregular Adversaries. Draft Version 2.0, 21 July 2010.

[MNE 6 GRE 2010] Leandros, Nikos (MNE 6 Greek Study): The Role of Media in terms of its Interaction with the Wider Information Environment – Methodology for Analysis, Indicators-Filters and Variables that are used by the Media in order to Understand the Information Environment. Hellenic National Defense General Staff Study, Academic Partner: Dr Nikos Leandros, Associate Professor at Panteion University of Social and Political Sciences Department of Communication, Media and Culture. Athens, February 2010.

[MNIOE 2007] MNIOE White Paper 'Information Activities in Future Coalition Operations – A Comprehensive Approach (from a Military Perspective)', Final Draft Version 1.8, 31 May 2007.

[MNIOE 2008] MNIOE Analytical Concept 'Development of a Multinational Information Strategy', Final Draft Version 1.0, 31 October 2008.

[MNIOE 2009a] MNIOE Framework Concept 'The Information Factor within a Comprehensive Approach to Multinational Crisis Management', Final Draft Version 3.0, 03 April 09.

[MNIOE 2009b] MNIOE Applied Concept 'The Military Information Operations Function within a Comprehensive and Effects-Based Approach', Final Draft Version 3.0, 29 May 2009.

[Moffat 2003] Moffat, James: Complexity Theory and Network Centric Warfare. Command and Control Research Program (CCRP), September 2003.

[Morgan et al. 2009] Morgan, Michael; Shanahan, James; Signorelli, Nancy: Growing up with Television - Cultivation Processes. In: Bryant, Jennings; Oliver, Mary Beth: Media Effects - Advances in Theory and Research. Routledge: New York, 2009, pp. 34 - 49.

[MPICE 2006] USIP-FFP: Measuring Progress in Conflict Environments (MPICE) – Metrics Framework for Assessing Conflict Transformation and Stabilization. December 2006.

[MPICE 2006a] Tousley, Scott: Measuring Progress In Conflict Environments (MPICE): Initial Metrics Analysis Tool. - US Army Corps of Engineers (USACE); Logos Technologies: December 2006.

[MPICE 2006b] MPICE (Measuring Progress in Conflict Environments). Literature Review, Submitted by The Fund for Peace to Logos Technologies, 29 December 2006.

[MPICE 2007] USIP-FFP: Measuring Progress in Conflict Environments (MPICE) – Metrics Framework for Assessing Conflict Transformation and Stabilization. July 2007.

[MPICE 2008] Dziedzic, Mike: Measuring Progress in Conflict Environments (MPICE): Metrics Framework for Assessing Conflict Transformation and Stabilization. - Draft - USIP-FFP, 19 March 2008.

[MPICE Software 2008] Engler, Jim: MPICE Software Tool. – Whitepaper. – Logos Technologies: 12 February 2008.

[MWOD 2010] Merriam-Webster's Online Dictionary, http://www.merriam-webster.com/dictionary/.

[NATO AAP-6 2007] NATO Glossary of Terms and Definitions (English and French), 16 April 2007.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

[NATO AJP-3.10 2009] NATO Allied Joint Doctrine for Information Operations, 23 November 2009.

[NATO COBP 2002] NATO Code of Best Practice for C2 Assessment, CCRP, Revised Version, 2002.

[NATO ESAH 2007] NATO Engagement Space Assessment Handbook, Version 1.0, Headquarters Supreme Allied Commander Transformation (HQ SACT), Norfolk, 10 Aug 2007.

[NATO KDH 2010] NATO Bi-Strategic Command Knowledge Development Handbook, Pre-Doctrinal Handbook, Final Draft 17 Mar 2010.

[NATO RTO 2004] NATO Code of Best Practice for Command and Control Assessment, NATO Research and Technology Organisation, Technical Report TR-081, January 2004.

[Neuendorf 2002] Neuendorf, Kimberly A.: The Content Analysis Guidebook. SAGE Publications, Inc.: Thousand Oaks, California et al., 2002.

[Noelle-Neumann 1982] Noelle-Neumann, Elisabeth: Die Schweigespirale. Öffentliche Meinung – unsere soziale Haut. Ullstein: Frankfurt am Main et al., 1982.

[Noelle-Neumann/Schulz 1994] Noelle-Neumann, Elisabeth; Schulz, Winfried (Hrsg.): Fischer Lexikon Publizistik Massenkommunikation. Fischer: Frankfurt am Main, 1994.

[Nyheim et al. 2001] Nyheim, David; Leonhardt, Manuela; Gaigals, Cynthia: Development in Conflict: A Seven Step Tool for Planners. Version 1. - FEWER; International Alert; Saferworld: London, 2001. – Internet: http://www.international-alert.org/pdf/tool.pdf, seen 03 February 2010.

[OECD/DAC 1999] Organisation for Economic Co-operation and Development (OECD): Guidelines for Evaluating Humanitarian Assistance In Complex Emergencies.- Paris, France, 1999.

[OECD/DAC 2000] Organisation for Economic Co-operation and Development, Development Assistance Committee (DAC): Results Based Management in the Development Co-operation Agencies: A Review of Experience, 2000.

[OECD/DAC 2001] Organisation for Economic Co-operation and Development (OECD): The DAC Guidelines - Helping Prevent Violent Conflict. OECD Publications Service, Paris, France, 2001.

[OECD/DAC 2007] Organisation for Economic Co-Operation and Development (OECD): The OECD DAC Handbook on Security System Reform (SSR) Supporting Security and Justice. Paris, France, 2007.

[OECD/DAC 2008] Organisation for Economic Co-operation and Development, Development Assistance Committee (DAC): Glossary of Key Terms in Evaluation and Results Based Management, 2008.

[OECD/DAC 2008a] Organisation for Economic Co-operation and Development, Development Assistance Committee (DAC): Guidance on Evaluating Conflict Prevention And Peacebuilding Activities. - Working draft for application period. A joint project of the DAC Network on Conflict, Peace and Development Co-operation and the DAC Network on Development Evaluation, Paris, France, 2008.

[OIF StratComm 2009] Cioppa, Thomas M. (Colonel, Military Police, US Army): Operation Iraqi Freedom strategic communication analysis and assessment. - In: Media, War & Conflict. - SAGE Publications: Los Angeles, London, New Delhi, Singapore and Washington DC, http://mwc.sagepub.com Copyright The Author(s), 2009. - Reprints and permissions: http://www.sagepub.co.uk/journalspermissions.nav/ Vol. 2(1): 23-43 DOI: 10.1177/1750635209101353. – Filename: OIF Strategic Communication Analysis and Assessment.pdf.

[OSS 2009] The Official Statistics System: Good Practice Guidelines for the Development and Reporting of Indicators. Statistics New Zealand, Tatauranga Aotearoa, Wellington, New Zealand, July 2009.

[Perloff 1993] Perloff, Richard M.: The Dynamics of Persuasion. Lawrence Erlbaum Associates: Mahwah, New Jersey; London, 1993.

[Perloff 2003] Perloff, Richard M.: The Dynamics of Persuasion. Communication and Attitudes in the 21st Century. Lawrence Erlbaum Associates: Mahwah, New Jersey; London, 2003.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

[Perse 2001] Perse, Elizabeth M.: Media Effects and Society. Lawrence Erlbaum Associates: Mahwah, New Jersey; London, 2001.

[Preiss et al. 2007] Preiss, Raymond; Gayle, Barbara Mae; Burrell, Nancy; Allen, Mike; Bryant, Jennings (Eds.): Mass Media Effects Research. Advances through Meta-Analysis. Lawrence Erlbaum Associates: Mahwah, New Jersey; London, 2007.

[Ropohl 1999] Günter Ropohl, Philosophy of Socio-technical Systems, in: Society for Philosophy and Technology, Spring 1999, Volume 4, Number 3, 1999.

[Salwen/Stacks 1999] Salwen, Michael B.; Stacks, Don W. (Eds.): An Integrated Approach to Communication Theory and Research. – Lawrence Erlbaum Associates: Mahwah, New Jersey, 1999.

[Schenk 2007] Schenk, Michael: Medienwirkungsforschung. 3. Auflage. Mohr Siebeck: Tübingen, 2007.

[S/CRF ICAF 2008] Office of the Coordinator for Reconstruction and Stabilization (S/CRS): Interagency Conflict Assessment Framework (ICAF). U.S. Department of State, Internet: http://www.state.gov/s/crs/c12936.htm, seen 18 September 2009. In: R&S PCC 15 July 2008

[S/CRS ICAF 2009] Office of the Coordinator for Reconstruction and Stabilization, United States Department of State: Interagency Conflict Assessment Framework. - Washington, DC (www.crs.state.gov), 2009. - Internet: http://www.crs.state.gov/shortcut.cfm/C6WW, seen 9 March 2010.

[Shannon 1948] Shannon, C. E.: A Mathematical Theory of Communication. Reprinted with corrections from The Bell System Technical Journal, Vol. 27, pp. 379–423, 623–656, July, October, 1948.

[Shavelson et al. 1991] Shavelson, Richard J.; McDonnell, L.; J. Oakes (1991): Steps in designing an indicator system. Practical Assessment, Research & Evaluation, 2(12) (1991). Retrieved September 18, 2009 from http://PAREonline.net/getvn.asp?v=2&n=12.

[SIDA 2006] Swedish International Development Cooperation Agency (SIDA), Division For Peace And Security Through Development Cooperation: Methods Document. Manual for Conflict Analysis. – Stockholm, January 2006.

[Smith 2004] Smith, Dan: Trends and Causes of Armed Conflict. - Berghof Research Center for Constructive Conflict Management - Edited version Aug 2004 (First launch Mar 2001). - Internet: http://www.berghof-handbook.net.

[Smith 2008] Smith, Dan: Systemic Conflict Transformation: Reflections on Utility. - Berghof Research Center for Constructive Conflict Management - Berghof Research Center for Constructive Conflict Management - Berghof Handbook Dialogue No. 6, First launch July 2008 - Internet: http://www.berghof-handbook.net.

[Sproles 2001] Sproles, Noel – Department Science and Technology Organisation (DSTO): Establishing Measures of Effectiveness for Command and Control: A Systems Engineering Perspective. DSTO-GD-0278, University of South Australia, March 2001.

[Slater 2002] Slater, Michael D.: Involvement as Goal-Directed Strategic Processing. In: James Price Dillard, Michael Pfau: The Persuasion Handbook. Sage: London 2002.

[Stave 2009] Stave, Svein Erik: The UN Practitioners Handbook for Peace Consolidation Benchmarking. - Monitoring and Evaluation of Peace Operations. - Workshop co-organized by IPI and NUPI New York, 8 May 2009. – Briefing. - Fafo Institute for Applied International Studies: Oslo, 2009.

[Sterman 2000] Sterman, John D.: Business Dynamics. Systems Thinking and Modeling for a Complex World. McGraw-Hill: Boston et al., 2000.

[Sydow 1995] Jörg Sydow: Der soziotechnische Ansdatz der Arbeits- und Organisationsgestaltung. Darstellung, Kritik und Weiterentwicklung. Campus, Frankfurt Main 1985 sowie Gertraude Mikl-Horke: Industrie- und Arbeitssoziologie. 3. Aufl., Oldenbourg, München/Wien 1995, S. 143ff.

[TI CPI 2009] Transparency International: Corruption Perceptions Index 2009. Methodological Brief. - 18/11/2009. - Internet:
http://www.transparency.org/content/download/47733/762810/CPI_2009_methodology_long_en.pdf, seen 10 March 2010.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

[Tolk et al. 2006] Tolk, Andreas; Diallo, Saikou Y.; Turnitsa, Charklles D.: Ontology Driven Interoperability – M&S Applications, Old Dominion University, 2006.

[Tooling University 2009] Tooling University: Metric. - Cleveland, Ohio. Internet: http://www.toolingu.com/definition-900230-12324-metric.html, seen 18 September 2009.

[Trist/Bamforth 1951] Eric Trist & K. Bamforth (1951). Some Social and Psychological Consequences of the Longwall Method of Coal Getting, in: Human Relations, 4, pp.3-38.

[UNDP 2002] United Nations Development Programme (UNDP): RBM in UNDP: Selecting Indicators, New York, 2002

[UNDP 2006] United Nations Development Programme (UNDP), Bureau for Development Policy, Democratic Governance Group: A Guide to Measuring the Impact of Right to Information Programmes. Practical Guidance Note. - April 2006.

[UNDP ADR AFG 2009] UNDP: Assessment of Development Results: Islamic Republic of Afghanistan. - United States of America: UNDP 2009. - Internet: http://www.undp.org/evaluation/documents/ADR/ADR_Reports/Afghanistan/ADR_Afghanistan.pdf, seen 10 March 2010.

[UNDP BP HDR 2002] Norris, Pippa and Zinnbauer, Dieter – United Nations Development Programme (UNDP), Human Development Report Office: Giving Voice to the Voiceless: Good governance, Human Development & Mass Communications. Background Paper for Human Development Report (HDR) 2002. November 2002.

[UNDP EO 2002] UNDP Evaluation Office: Guidelines for Outcome Evaluators. - Monitoring and Evaluation Companion Series #1. - UNDP: New York, 2002. - Internet: http://www.undp.org/evaluation/documents/HandBook/OC-guidelines/Guidelines-for-OutcomeEvaluators-2002.pdf, seen 10 March 2010.

[UNDP HB 2009] Handbook nn Planning, Monitoring and Evaluating for Development Results. - UNDP: New York, 2009. - Internet: http://www.undp.org/evaluation/handbook/documents/english/pme-handbook.pdf, seen 10 March 2010.

[UNDP ICAF 2008] N.N.: Principles of the Interagency Conflict Assessment Framework. - Reconstruction and Stabilization Policy Coordinating Committee (R&S PCC), 15 July 2008. - Internet: http://www.crs.state.gov/index.cfm?fuseaction=public.display&shortcut=CJ2R, seen 9 March 2008.

[UNESCO IPDC 2007] United Nations Educational, Scientific and Cultural Organisation (UNESCO) – International Programme for the Development of Communication (IPDC): Defining Indicators of Media Development – Background Paper. March 2007.

[USAID CAF 2005] U.S. Agency for International Development (USAID): Conducting a Conflict Assessment. A Framework for Strategy and Program Development. Conflict Management and Mitigation. U.S. Agency for International Development, Office of Conflict Management and Mitigation: Washington, DC, April 2005.

[USAID TK 2005] U.S. Agency for International Development (USAID)´: LAND & CONFLICT. - A TOOLKIT FOR INTERVENTION. - Office of Conflict Management and Mitigation, Bureau for Democracy, Conflict and Humanitarian Assistance. - Washington, DC: 2005.

[USJFCOM 2006] USJFCOM-Joint Experimentation Directorate/EBO Prototyping Team: Effects-Based Approach to Multinational Operations, Concept of Operations (CONOPS) with Implementing Procedures Version 1.0 (Draft), 31 July 2006.

[USJFCOM 2007] USJFCOM-Joint Experimentation Directorate: The Comprehensive Approach – A Conceptual Framework for Multinational Experiment 5, Draft Working Paper, Version 0.11, 18 September 2007.

[Van de Goor/Verstegen 1999] Van de Goor, Luc; Verstegen, Suzanne: Conflict Prognosis: Bridging the Gap from Early Warning to Early Response. - Part One. - Discussion Paper. - Netherlands Institute of International Relations 'Clingendael'. - The Hague, November 1999. - Internet: http://www.clingendael.nl/publications/1999/19991100_cru_paper_vandegoor.pdf.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

[Van de Goor/Verstegen 2000] Van de Goor, Luc; Verstegen, Suzanne: Conflict Prognosis: A Conflict and Policy Assessment Framework. - Part Two. - Part One. - Discussion Paper. - Netherlands Institute of International Relations 'Clingendael', Conflict Research Unit. - The Hague, June 2000. - Internet: http://www.nbiz.nl/publications/2000/20000602_cru_paper_vandegoor.pdf.

[Wanta/Ghanem 2007] Wanta, Wayne; Ghanem, Salma: Effects of Agenda Setting. In: Preiss, Raymond; Gayle, Barbara Mae; Burrell, Nancy; Allen, Mike; Bryant, Jennings (Eds.): Mass Media Effects Research. Advances through Meta-Analysis. Lawrence Erlbaum Associates: Mahwah, New Jersey; London, 2007, pp. 37-51.

[Watzlawick 1967] Watzlawick, Paul; Beavin, Janet H.; Jackson, Don D.: Pragmatics of Human Communication – A Study of Interactional Patterns, Pathologies, and Paradoxes, New York : W. W. Norton & Company, New York, 1967.

[Weaver 2008] Weaver, David: Agenda Setting. In: Donsbach, Wolfgang (ed): International Encyclopedia of Communication Online. Blackwell Publishing Inc.: March 2008. Internet: http://www.communicationencyclopedia.com/public/tocnode?query=agenda+setting&widen=1&result_number=1&from=search&id=g9781405131995_chunk_g97814051319956_ss36-1&type=std&fuzzy=0&slop=1, seen 19 September 2009.

[Wiener 1965] Wiener, Norbert: Cybernetics or Control and Communication in the Animal and the Machine. – Copyright 1948 and 1961 by the MIT. - MIT Press: Cambridge, Massachusetts, 1965.

[World Bank CAF 2002] Conflict Prevention and Reconstruction Team (Cpr), Social Development Department, World Bank: Conflict Analysis Framework (CAF): Identifying Conflict-related Obstacles to Development. October 2002.

[World Bank 2002a] Conflict Prevention and Reconstruction Unit: The Conflict Analysis Framework (CAF): Identifying Conflict-related Obstacles to Development. - Social Development Department. Dissemination Notes - Number 5. - October 2002.

[World Bank CAF 2005] Conflict Prevention and Reconstruction Team (Cpr), Social Development Department, World Bank: Conflict Analysis Framework (CAF). Draft, April 11, 2005.

[Wyer/Albarracín 2005] Belief Formation, Organization and Change: Cognitive and Motivational Influences. In: [Albarracín et al. 2005], pp. 273-322

Annex A1   Outcome 2 Baseline Assessment Statements

<u>MNE6 Outcome 2 overarching baseline assessment statements:</u>

- Coalitions lack a common expression of corporate vision that translates the basic consensus on commonly shared values and principles into unified action in the information environment.

- Partners lack sufficient cohesion and/or comprehension of the coalition as an entity, which is a requirement for shaping the information environment more effectively in accordance with common objectives.

- Although the necessity of shaping the information environment is widely acknowledged by the partners, coalitions so far have not been able to develop and implement relevant common strategic-political guidance.

- Coalition actions – words and deeds – are insufficiently integrated for effectively shaping the information environment.

- Coalitions are challenged with overcoming cultural differences and national/organisational caveats concerning internal and external communication.

- Coalitions do not sufficiently engage non-coalition actors in a sustainable dialogue to benefit coalition communication efforts within a comprehensive approach.

- Coalitions lack a comprehensive understanding of the information environment and related opportunities and challenges for shaping it.

- Coalitions lack a common strategic assessment of the information environment, informed by related national assessments from the earliest stage.

<u>Objective 2.2 specific baseline assessment statements:</u>

- Coalition actors analyse and assess parts of the information environment from their functional point of view and focus on specific aspects while losing sight of the big picture. Associated analysis findings and assessments are not expediently shared among coalition actors.

- Coalition actors do not sufficiently understand and consider the dynamics of the information environment. The impact of own and other actors' activities on the information environment and timelines for achieving specific outcomes are poorly understood and consistently not appropriately regarded.

- Coalition analysis of actors and audiences is not comprehensive enough, and cultural differences and specifics are not sufficiently addressed. Relevant (local, regional, and global) actors and audiences are not analysed to the required extent or even disregarded. Furthermore Coalitions tend to analyse and assess from their (often westernised) point of view, rather than from other actors' perspectives and perceptions.

- Coalition analysis of the information environment does not adequately consider basic and state-of-the-art knowledge about human cognitive, social, and communication-related processes.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

– Current (civil and military) monitoring and evaluating approaches in crisis engagements lack relevant metrics and indicators for assessing the situation and changes in the information environment in a comprehensive manner.

– Traditional information gathering processes do not sufficiently cover relevant aspects for supporting a comprehensive analysis and assessment of the information environment.

– Coalitions lack adequate processes, methods and tools to analyse, describe and visualise the situation in the information environment and feed associated findings into the coalition processes. A lack of dialogue between operators and analysts adds to this deficiency as analysis is frequently not initiated by the appropriate questions.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Annex A2   Objective 2.2 Study Issues

2.2.1 What are requirements for analysis and assessment of the information environment in support of coalition actors?

    2.2.1.1 How do we comprehensively and systemically understand the information environment as a 'system' to act in and shape?

    2.2.1.2 How do we structure and decompose the information environment in order to describe its entirety, complexity, interrelationships and dynamics?

    2.2.1.3 What methods are adequate to analyse and assess the information environment in support of coalition actors?

    2.2.1.4 What information and knowledge is required to feed comprehensive and systemic analysis of the information environment?

    2.2.1.5 Which level of detail is required for the analysis and assessment of the information environment in support of coalition actors?

    2.2.1.6 What are relevant perspectives when analysing and assessing the information environment?

    2.2.1.7 Do different analysis and/or assessment requirements regarding the information environment arise from different types or phases of a crisis engagement, or from different mission types and scenarios?

    2.2.1.8 How do we identify and describe desired conditions in the information environment in support of the development and implementation of political-strategic guidance for shaping the information environment?

    2.2.1.9 How do we appropriately consider cultural specifics of different audiences when analysing and assessing the information environment?

    2.2.1.10 How do we conduct perspective analysis and assessment ('what-if') of the information environment?

    2.2.1.11 How do we analyse and estimate cause-effect-relationships in the information environment?

    2.2.1.12 How do we detect and measure effects and changes in the information environment?

    2.2.1.13 How do we identify and assess opportunities and risks concerning effects in the information environment?

    2.2.1.14 What effects in the information environment are specifically important from a coalition actors' perspective?

    2.2.1.15 How do we derive potential information activities from common political-strategic guidance for shaping the information environment?

    2.2.1.16 What information activities are specifically important from a coalition actors' perspective?

    2.2.1.17 What are resource requirements (e.g. capabilities, competencies, personnel) regarding analysis and assessment of the information environment?

    2.2.1.18 What tools and instruments are required for analysis and assessment of the information environment?

    2.2.1.19 How do we estimate time dependencies between activities / events and resulting outcomes in the information environment?

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

2.2.2 How do we embed the analysis and assessment of the information environment within an overarching analysis and assessment approach in crisis engagements?

    2.2.2.1 What are overlaps and interfaces regarding the analysis and assessment of the information environment and other analysis and assessment subjects?

    2.2.2.2 Which level of detail for the analysis and assessment of the information environment is required for supporting an overarching analysis and assessment of the crisis engagement?

    2.2.2.3 How do we design the interaction of the analysis and assessment of the information environment with other analysis and assessment aspects?

    2.2.2.4 How do we design interactive processes and structures for analysis and assessment?

    2.2.2.5 Who are appropriate and required contributors to the analysis and assessment of the information environment?

    2.2.2.6 What are appropriate sources of information and knowledge required for analysing the information environment?

    2.2.2.7 What are the contributions to the analysis and assessment of the information environment at the various levels of engagement?

    2.2.2.8 How do we improve and exploit existing analysis capabilities to meet coalition actors' requirements?

    2.2.2.9 Which analysis and assessment products have to be delivered for what purpose and when?

    2.2.2.10 Which are the procedures and the structures to receive tasks, manage the analysis/assessment processes, and deliver respective products?

2.2.3 How do we design the interplay between the processes for analysis and assessment of the information environment and the processes for the development and implementation of coalition guidance for shaping the information environment throughout all levels of engagement?

    2.2.3.1 How do we transfer analysis and assessment results into development and implementation processes at the various levels?

    2.2.3.2 How do we design the interplay between analysts and developers of coalition guidance for shaping the information environment?

    2.2.3.3 How do we design the interplay between analysts and implementers of coalition guidance for shaping the information environment?

    2.2.3.4 What analysis and assessment products are required by customers at various level for supporting development and implementation of coalition guidance for shaping the information environment?

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Annex B   Characteristics of Complex Adaptive Systems

The information environment can be interpreted as a complex adaptive system (CAS) of socio-technical systems, pervading the operational environment.

Addressing the characteristics of complex adaptive systems, one has to accept that no unique scientific position exists as to what precisely are "characteristics" of CAS. This fact stems from the genesis of "*Complexity Science*" that has gradually been emerging over the last couple of decades when scientists realised striking similarities between seemingly unrelated phenomena in their particular domains. *Complexity Science* may thus be seen as a loosely organised academic field which aims at understanding CAS, transgressing the boundaries of individual disciplines. It is not a single theory, but encompasses several theoretical frameworks, is highly interdisciplinary, and seeks transdisciplinary answers to fundamental questions about adaptable and changing systems.

For the sake of clarity, "characteristics" are understood in a broad way by (semantically) subsuming all of the following points related to a CAS:

- Attribute
- Aspect
- Property
- Feature
- Phenomenon
- Mechanism.

The classification used in this Annex, i.e. the grouping and structuring of CASs' major characteristics tries to provide a balanced view taking into account important commonalities found in the scientific literature [Couture 2007]. As the multidisciplinary nature of the field implies, varying interpretations and views exist nevertheless, which depend on the discipline or specific background of different persons/authors.

The above mentioned commonalities are used to classify the characteristics of CASs by considering two perspectives (or dimensions):

- level of aggregation: Distinction between elements of a CAS and the CAS as a whole (micro vs. macro-level)
- distinction between description and manifestations of CAS (or similar: static and dynamic aspects)

The four possible combinations of these perspectives are represented by the following figure**.**

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010
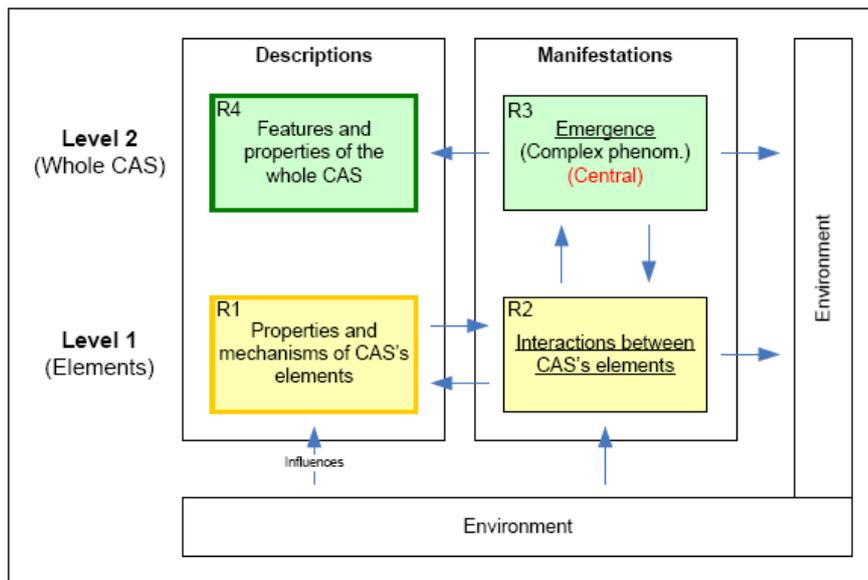
Figure: Two perspectives of CAS [from: Couture 2007].

Arrows represent interdependencies between the combinations. Moreover, the following general points need to be considered:

- Emergence[66] of complex phenomena, which is a central topic in the realm of complex (adaptive) systems, results from interactions between the elements of a CAS.
- Subjective perspective of the analyst is always included in the definition of a CAS's boundary (there is no objective concept of "boundary" of a complex system).
- CASs can be described at both, micro- and macro-levels:
    - o Level 1 gives internal descriptions of CASs (e.g. R1: elements, internal interrelationships, rules, values, beliefs, models, etc).
    - o Level 2 gives global descriptions of CASs.
- Properties and mechanisms of CASs at Level 1 (R1) determine the types of interaction that happen between elements at Level 1 (R2).
- Properties, mechanisms and manifestations of CASs at Level 1 (R1, R2) are determinant for observed phenomena at Level 2 (R3, R4).
- Interactions between elements at Level 1 (R2) trigger emergent phenomena at Level 2 (R3).
- Interactions between elements at Level 1 (R2) may also influence mechanisms, features and properties at Level 1 (R1).
- Complex phenomena at Level 2 (R3) may influence back interactions at Level 1 (R2). For instance, long term evolution at Level 2 will influence short term activities at Level 1. [Holland 1996]

---

[66] The description of "Emergence" is given below.

– The description of the CAS's environment is not part of the CAS's description; it lies outside the CAS.

– Environment influences CASs at Level 1 (through its elements and interrelationships; R1 and R2).

– Both levels of a CAS may influence its environment (R2 and R3).

Based on these considerations, the characteristics of complex adaptive systems will be classified according to:

1. Properties and mechanisms at the level of interacting elements (descriptions and manifestations at the micro level; due to their intimate relationship the description and manifestation of CAS at the micro-level are not distinguished).

2. Complex phenomena at the level of CASs (manifestations at the macro level).

3. Properties at the level of CASs (descriptions at the macro level).

In the remainder of this appendix, the main characteristics of CAS are classified according to the above scheme. The following structure is chosen for each characteristic:

– Brief description

– What does it mean?

– Relevance and implications with respect to analysis and assessment

Properties and mechanisms at the level of interacting elements

For the basis of this micro-level consideration of CAS see the definitions of *System*, *Complex System*, and *Complex Adaptive Systems* in the Glossary of Terms and Definitions.

Coupling of Elements

A characteristic feature of any system is the coupling between its elements (or actors). Without interactions, interesting macro-level behaviour of a CAS such as →emergence or any other phenomenon at the level of the CAS as a whole will never arise – mere parallelism, i.e. parallel existence without interactions or coupling, is not enough.

The relationships between the elements may be distinguished as tightly coupled, moderately coupled or loosely coupled. In particular tightly coupled elements display a high degree of interdependence, i.e. the actors in the CAS interact strongly with one another and with the environment.

When analysing a CAS, one needs to closely consider the interactions of its elements. This implies not only analysing which elements are coupled but also how they are coupled (i.e. strength and direction). Since CASs and in particular socio-technical systems are →dynamic, →self-organising systems which are governed by →feedback and thus →nonlinear relations, finding the right level of description of the system, for example for the purpose of modelling & simulation provides a significant challenge.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Feedback

Feedback is a concept first recognized by Norbert Wiener in his works on Cybernetics in the middle of the 19th century. It refers to situations where some effect causes something to itself.

Feedback describes the situation when the information about the result of an event or phenomenon (which may well be an "action") in the past will influence an occurrence of the same event (or the development of the original phenomenon) in the present or future. When such an event is part of a chain of cause-and-effect that forms a circuit or loop, the event is said to *"feedback"* into itself. [Wikipedia]. In other words, feedback is the process in which (part of the output) of a system is returned to its input in order to regulate its further output.

One distinguishes between *negative feedback* and *positive feedback*. Negative feedback acts in such a way that the output of a system acts to oppose changes to the input of the system, i.e. it acts as a regulator. If the overall feedback of a system is negative, the system tends to be stable. In contrast, positive feedback acts such that the output causes more to itself, i.e. any perturbation to the system that is fed back positively results in an amplification of the original instead of stabilisation. Globally positive feedback systems tend to be unstable. Both positive and negative feedback require the existence of a feedback loop in order to work. Typical CASs have multiple interrelated feedback loops.

Feedback can happen inside CASs or between CASs and their environments. It is one of the causes of →non-linearity. Feedback loops are used to control CASs. In a sense, feedback allows a CAS to be adaptive.

Concerning analysis and assessment, it is indispensable to understand the feedback structure of the system under consideration. Understanding the feedback gives the analyst a grip on the dynamics of the system since the latter is governed by the underlying feedback structure. Understanding the feedback structure opens the path to identifying key elements or key actors in a system such as pivotal points. The knowledge of such might open the path to influencing the system in a more controlled way, and assess the outcome of potential interventions in a CAS.

However, feedback is also often a source of misunderstanding and misperceptions of dynamics. Analysing the feedback structure in such a way that it actually helps to understand the proper and relevant dynamics of a CAS is a challenge of complexity reduction and problematic due to the dynamics of the CAS itself (i.e. changes in the CAS's feedback structures over time).

Non-linearity

A process is called non-linear if there is no (simple) proportional relation between cause and effect. Nonlinearity lies at the heart of phenomena such as chaos and →emergence.

Non-linearity is a common property of CAS. It is moreover the underlying reason for →emergence and thus for the statement that "The whole of a CAS is more than the sum of its parts". A famous example is the nonlinearity of the weather, where simple changes in one part produce complex effects throughout the system.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Non-linearity is present among elements and interrelationships of a CAS. It is often generated by →feedback loops and contributes to making the behaviour of the whole harder to anticipate or even predict.

From an analytical point of view, non-linearity is one of the major complicating characteristics of a CAS. Support is provided by analysing the →feedback structure of a CAS as it gives insights into some of the sources of non-linear behaviour and potentially the opportunity to identify leverage points.

Complex phenomena at the level of CAS as a whole

Emergence

Emergence is the key characteristic that distinguishes CAS from other (complicated) systems with multiple components. The appearance of emergent properties is the single most distinguishing feature of complex (adaptive) systems with impacts on many different areas and disciplines.

Although there is no agreed definition of emergence, it basically means that a new phenomenon at the level of the CAS as a whole cannot be explained or anticipated by the properties and interactions of its lower level elements or agents. It is "the arising of novel and coherent structures, patterns and properties during the process of →self-organization in complex systems." [Goldstein 1999]. Emergence is often coined in the phrase "the whole of a CAS is more than the sum of its parts".

The reason why emergent behaviour is hard to predict is the intricate interactions between elements of the CAS that enable it to exhibit emergence (→feedback, →non-linearity), as well as the fact that the number of interactions between elements of a system increases substantially with the number of elements, thus potentially allowing for many new and subtle types of behaviour to emerge. Emergence is a core principle for →self-organisation which in turn favour (self-)→adaptation.

A prominent example of emergence is the stock market [Wikipedia]. There is no leader which controls the workings of the entire market. Agents, or investors, have knowledge of only a limited number of companies within their portfolio, and must follow the regulatory rules of the market and analyse the transactions individually or in large groupings. Trends and patterns emerge which are studied intensively by technical analysts which in turn feed back into the system.

From an analytical point of view the phenomenon of emergence requires the analyst to continuously monitor the CAS under consideration. As recent experiences from the stock markets show, phenomena emerge that could not have been anticipated and surprise everyone. Thorough analysis may not have completely avoided these emergent behaviors of a CAS but it may definitely have helped to mitigate its effects.

Self-organisation

Self-organization paraphrases the spontaneous self-generated development of a pattern or structure from an (unordered) dynamical CAS.

There is no hierarchy of command and control in a complex adaptive system. There is no planning or managing, but there is a constant re-organising to find the best fit with the environment. A classic example is that if one were to take any western town and add up all the food in the shops and divide by the number of people in the town

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

there will be nearly a two weeks supply of food, but there is no food plan, food manager or any other formal controlling process. The system is continually self organising through the process of emergence and feedback.

Self-organization usually relies on →feedback

<u>Adaptation</u>

Adaptation denotes changes of the properties of a CAS. Causes leading to adaptation are the proliferation and extinction of agents, changes in the environment as well as changes in the behaviour on part of the actors due to their learning from experience.

Properties at the level of CASs as a whole

<u>History dependence</u>

Complex adaptive systems are history dependent. They are shaped and influenced by their former states. This may seem obvious and trivial, but much of the traditional science and management theories ignore this point. Often one acts according to "what is good in one context makes sense in all contexts".

In economics, in nature, in weather and in human organisations, many examples where understanding history is paramount to understanding the current position and potential movement of a CAS may be seen.

The analysis needs to carefully consider the history of a CAS. Snapshot thinking and acting, as it is often realised, i.e. pretending that by knowing a CAS from looking at it at a single instance of time, has to be avoided – it is rather the analyst that shall be able to assess the effects of neglecting history dependence.

<u>Co-evolution</u>

CAS generally exist within an environment that is, in turn, affected by the CAS. Co-evolution refers to the adaptation of the CAS to changes of the environment. An example is a scarcity of natural resources due to their consumption by agents that may force the agents either to find new sources or to seek for alternatives.

<u>Resilience</u>

The resilience of a CAS provides the capacity to absorb shocks while maintaining function. The strength of the resilience is related to the magnitude of disturbances that the system can absorb and remain within a given state, the degree to which the system is capable of self-organization, and the degree to which the system can build capacity for learning and adaptation.

In addition to the characteristics classified as explained above, there are also characteristics of CAS that refer to human cognition and the perception and understanding of complexity.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Characteristics of CAS related to human cognition [TBD]

<u>Policy resistance</u>

Policy resistance denotes the phenomenon that on the grounds of the complex nature of a CAS well intentioned measures to solve urgent problems fail to work due to unforeseen reactions or behaviour of agents or the environment.

<u>Counter-intuitive Behaviour</u>

Counter-intuitive behaviour occurs if a CAS runs counter to common notions and intuition. The deeper reason is that in certain cases the complexity of a CAS prevents an intuitive understanding and prediction of its system behaviour.

<u>Characterization by Trade-Offs</u>

The (partial) characterization of a CAS by trade-offs is possible if there are balancing mechanisms between state variables that lead to a decrease of the first variable if there is an increase of the second variable and vice versa. The identification of trade-offs in a CAS may help to reduce the difficulties in gaining an understanding of its system behaviour.

Final remark: It is apparent in the explanations and descriptions that the characteristics of a CAS are not independent but may rely on each other.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Annex C1 Framework of Information Environment Models

Overview of Models

The model framework contains different types of models:

- as a basic model an 'elementary communication model'
- structural models decomposing information environment in terms of relevant sub-systems and elements:
    - o 'actor model'
    - o 'media landscape model'
    - o 'information system model'
- descriptive and process models:
    - o 'issues of concern/interest for actors'
    - o 'interrelationship model for actors and the media'
- influence models for relevant aspects and factors of the information environment
    - o 'credibility of information sources'
    - o 'attitudes of actors'
    - o others

Model Descriptions

Elementary Communication Model

This section describes an 'elementary communication model' that underlies any kind of communication process, simple ones as well as more complicated ones which can be interpreted as a chain or sequence of this elementary brick of communication. The 'elementary communication model' capitalises on a number of simple communication models and appropriately integrates and enriches those for the purpose of this concept. The resulting model describes core elements of any communication process. It can be used for many purposes, e.g., for systematically analysing processes such as information flow between actors or in an operating environment or systems such as information systems of specific actors.

In the academic world there is no clear answer to the question, "What actually constitutes communication?" Currently, many definitions of communication are used in order to conceptualise the processes by which people assign meaning. Communication is also understood as the exchanging of understanding.

It is evident that the creation of an overarching theory of communication goes beyond the scope of this conceptual work. Therefore, the stepwise analytical integration of relevant and practical usable approaches and products in a transdisciplinary manner

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

has to serve as a pragmatic solution for the construction of the generic model of the information environment.

Communication processes of mass media can be seen as a specialisation of a more general communication process. The basic communication process consists of a sender, a communication channel and a related medium, a message including content, and a receiver. The communication channel serves as a medium, such as print media or broadcast (electronic) media, through which a message is transmitted to the receiver, e.g. an intended audience.


Figure: Basic Communication Model

Communication is a process whereby information/content is enclosed in a package/message and is channelled and imparted by a sender to a receiver via some medium. In order to allow a closer look at real world communication processes, the basic elements of such a process will be characterised in the following section in a generic way.

An actor-oriented definition of the communication process serves as foundation for further analysis:

Definition: Communication is the exchange of information between actors through a system of signs, symbols, or behaviour.[67]

Each actor has available his own information system.[68]

A more detailed model of the linear one-way communication process – in which communication is directed from A to B without 'feedback communication' from receiver to the sender – looks like the following:

---

[67] Therefore, a technical system itself as part of a socio-technical system may also serve as communication partner in the functional role of an actor.

[68] See section 6.4.2.3 on the 'information system model'.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010
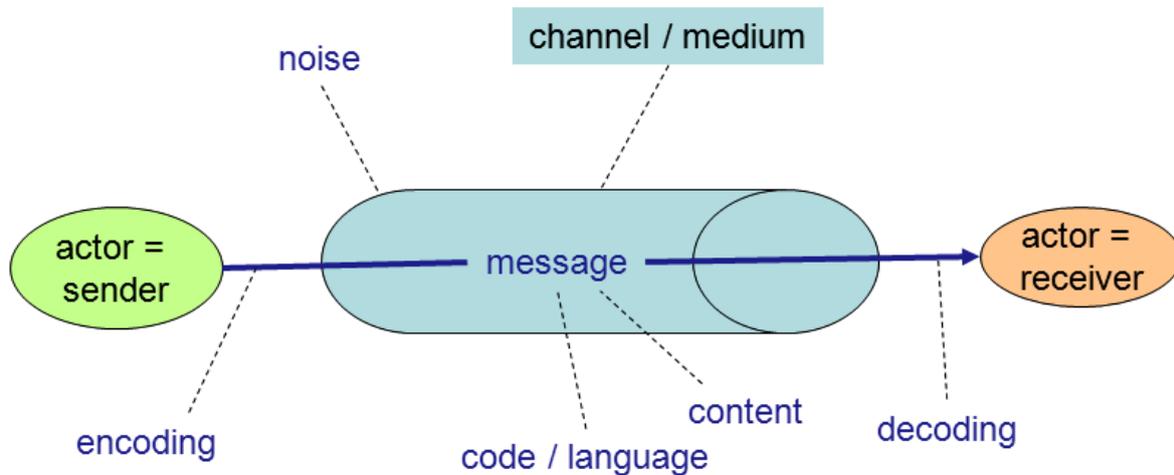
Figure: One-Way Communication Model

The elements of this linear communication process can be described as follows:

Sender: The actor in the functional role as sending communication partner ('sender') usually has an intention to communicate with the receiver.[69] This intention makes up the content of the message, often called input. The sender encodes the message with means of his available and chosen code(s). Thus he gives informal and formal expression to the content.

Message: The message represents content and refers to intended and interpreted meaning. Depending on the given context and intrinsic perception parameters, e.g. mental models of the actor, the interpretation and perception of the message occurs by communication partners.

Channel/Medium: The message is sent via a channel and a related medium, which can be made of a variety of materials. In acoustic communication it consists of air and airwaves in it, in written communication of paper or other writing materials with hand-written or printed text on it. In broadcasting, a channel is a range of frequencies (or, equivalently, wavelengths) assigned by a government or administrative body for the operation of a particular television station or radio station. Communication partners use a lot of channels for natural (e.g., spoken word, eye contact) and technically mediated communication (e.g., television broadcasting). The channel serves as physical and technical predisposition for communicative interoperability.

Noise: The channel is subjected to various sources of noise. One example is telephone communication, where numerous secondary sounds are audible (e.g., while using a mobile phone in a tunnel). Even a temporarily rather solid channel such as paper can be crushed, stained, or yellowed, or defective pixels and certain monitor settings on the computer screen. Such phenomena are also noise in the communicative sense.

Receiver: The actor in the functional role as receiving communication partner ('receiver') decodes the incoming message, or expression. He "translates" it and thus

---

69   However, following Watzlawick's principle this is not always the case: „One cannot not communicate!" [Watzlawick 1967]

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

receives the content, often called output. The content is processed by the receiver, depending on situational receiver characteristics (e.g., individual characteristics like education, social context, attention, attitudes, and mental models).

Code: In the communication process, the relevance of a code becomes obvious: The codes (system of signs (e.g., language), symbols, or behaviour) of the sender and receiver must have at least a certain set in common (code overlap) in order to make communication work meaningfully. Otherwise, related activity might become necessary, e.g., translation services for codes the receiver is unfamiliar with (e.g., languages). The code refers to the syntactic, semantic, and pragmatic level of communicative interoperability (see below).

When looking at the numerous variations of this scheme in communication research it becomes clear that great effort has been made over decades to refine the understanding of the overall communication process and its elements, and the conditions under which a communication process takes place. Scholars of communications science elaborated linear communication models like above, where communication is said to be one way, like reading a book or watching TV, where no immediate feedback is possible. Another example for one-way communication is receiving a letter (medium) with written text on it (coded content in form of a message) in areas, where no immediate feedback to the sender is possible.

In interactional communication models, where communication is said to be two-way, like a telephone talk, messages are sent and received one at a time with delay. Depending on the communication situation, e.g., in the case of communication via telephone, direct feedback of the receiver will immediately change the functional roles of the communication partners. The receiver steps into the role of the sender and vice versa many times in a conversation. Along the way, this type of communication becomes a so-called two way communication as depicted by the following figure:


Figure: Two-Way Communication Model

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

A third kind of communication model labelled *transactional* communication model deals with communication taking place simultaneously at different channels, like face to face communication (F2F) or a video conference (VC), where verbal and nonverbal messages can be sent and received in parallel:
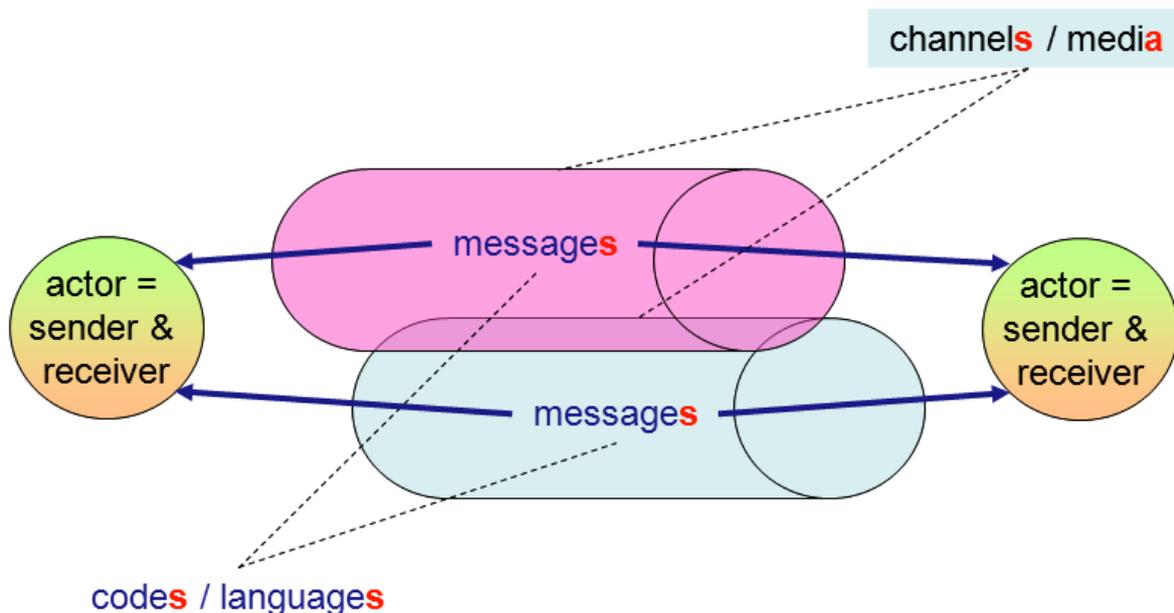

Figure: Transactional Communication Model

From a systemic viewpoint, it is necessary to highlight the relevance of contextual relations of the situation in which the involved communication partners are acting. In addition, the type and status of relations to other actors affect their way of communication and information processing.

Looking at the communication element 'channel' and the related 'medium' of communication, it becomes clear that interoperability is a precondition of meaningful and intended communication which can be established on four levels lying upon another.[70] On a technical level physical conditions are necessary for the exchange of data (e.g., wire, cable, or line of sight). On a syntactical level common data formats have to be used (e.g., rules of grammar or a mark-up language such as HTML for internet communication for web browsers). On a semantic level the interpretation of messages and terminology has to be agreed upon (e.g., used terms need to be known). On a pragmatic level a common evaluation of information has to be conducted (e.g., the same interpretation of the terms used by sender and receiver). Meaningful and intended communication requires that communicative interoperability is provided (at least to some degree) at all four levels.

---

[70] E.g., see [Leuchter/Schönbein 2006].

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010
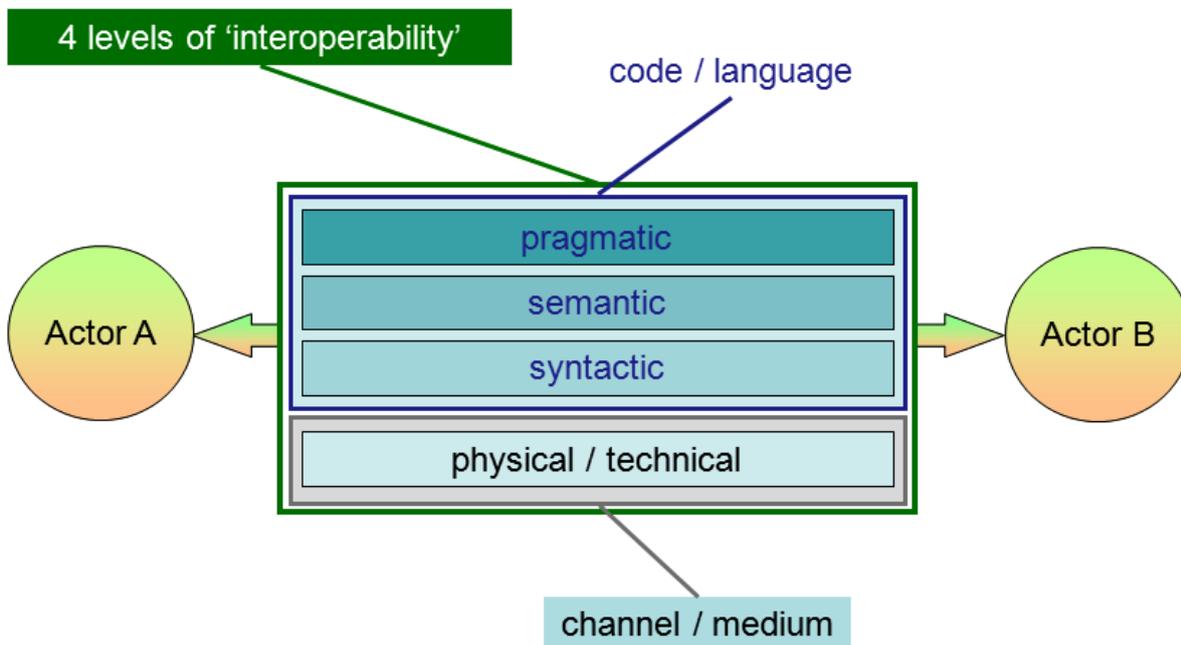
Figure: For levels of interoperability

The following examples show to what extent real life communication may consist of sub-processes in a complex integrated way:

– Telephone call: A sender tells (channel: spoken language) something via airwaves (medium) to his mobile phone (a mass medium device in the functional role of a two-way communication device). A mobile phone uses radio telecommunications over a cellular network of base stations known as cell sites (or it uses satellite communication), which transmit the encoded message to the receiving device of the receiver. Another mobile phone, which decodes these signals via telephone speaker into sound (channel: spoken language) and related air waves (medium: air) to the receiver.

– Radio broadcast: A radio moderator speaks something via air and airwaves into the studio microphone. These acoustic signals are being sent from the microphone via wire and many intermediate technologies to sending devices: "The transmission, via radio-frequency electromagnetic waves, of audible program material for direct reception by the general public. Electromagnetic waves can be made to travel or propagate from a transmitting antenna to a receiving antenna. By modifying the amplitude, frequency, or relative phase of the wave in response to some message signal (a process known as modulation), it is possible to convey information from the transmitter to the receiver."[71] The radio listener uses a radio receiver[72] which is an electronic circuit that receives its input from an antenna, uses electronic filters to separate a wanted radio signal from all other signals picked up by this antenna, amplifies it to a level suitable for further processing, and finally converts through

---

[71] Internet: http://www.answers.com/topic/radio-broadcasting, seen 4 August 2010.

[72] See http://en.wikipedia.org/wiki/Receiver_%28radio%29, seen 4 August 2010.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

demodulation and decoding the signal into a form usable for the consumer, such as sound, pictures, digital data, measurement values, navigational positions, etc. The radio receiver turns the received radio signal into sound which goes via airwaves into the ear of the listener.

While studying contemporary and older scientific papers and discussing their value, some specific theories and approaches produced interest because of their obvious relationships to mindsets, attitudes, attitude change, and their suitability to describe the process of influencing and structuring public opinion and persuasion such as the Agenda-Setting Theory and the Elaboration Likelihood Model (ELM).[73] Such models are considered valuable candidates for complementing the elementary communication model for analysis purposes.

Structural Models

In a systemic manner, structural models are used to decompose the 'system information environment' in its relevant sub-systems and elements. Structural models help to define the system boundaries and to identify relevant parts of the system under consideration and their interrelationships.

The resulting structural models are used to structure and systemise analysis efforts.

Structural models build the foundation for describing the status of a system or element in terms of its attributes and relations. They are also the basis for developing models of other types such as process models or 'dynamic models'.

Top-Level View on the Information Environment

In accordance to the starting point chosen (see 'Point of Departure' above) a top-level decomposition of the information environment results in the following view:
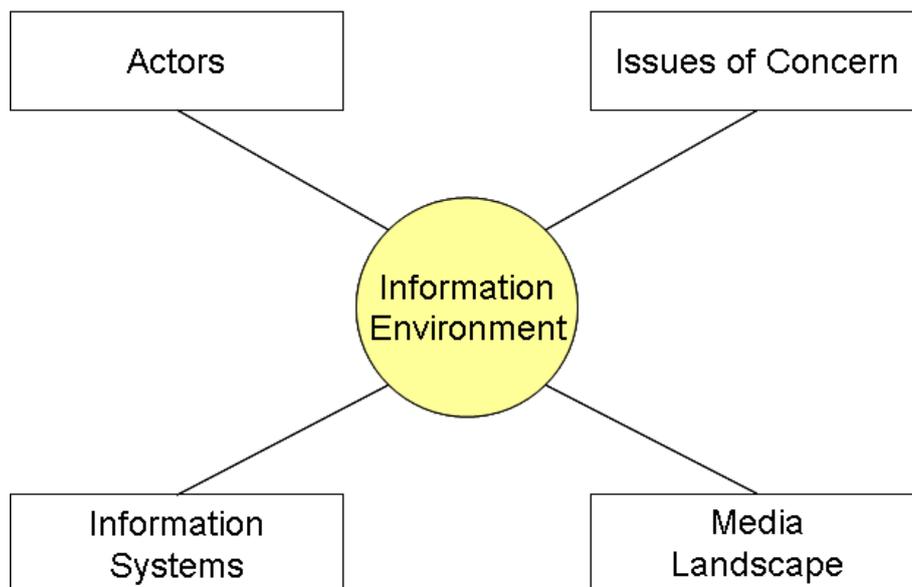

Figure: Top-Level View on the Information Environment

---

[73] See Annex C2 for details on these specific communication models.

The following section describes the models developed for structuring these parts of the information environment for 'actors', 'information systems', and the 'media landscape'. For the part 'issues of concern' a descriptive model was chosen (see section 'Descriptive and Process Models' below).

Actor Model

In the following a basic 'actor model' is presented that covers the basic ideas underlying the *concept of an actor* as a constituent of a dynamical system, e.g., the information environment. It delineates the basic processes and boundary conditions that affect an actor's decision making and activities.

The structural model is based on – but not confined to – actor-system-dynamics theory (ASD)[74] that emphasises the complexity and dynamical character of social systems and appears to be sufficiently general to provide a framework that can be applied to actors ranging in size from individuals to societies. The basic underlying assumption of ASD is that an actor pursues certain goals and that all activities prosecuted by an actor can be directly or indirectly traced back to these goals.[75] This assumption holds for every human being and, as a consequence, every human being is *a priori* to be considered an actor.

Categories of Actors

In the context of the information environment the relevant actors are persons or organizations, including state and non-state entities, within the international system with the capability or desire to influence others in pursuit of its interests and objectives. This will include governments, populations, hostile groups and organizations, their leaders as well as various kinds of media. An actor has to be considered relevant if his behaviour significantly influences the outcome of the coalition's operation.

The actor model is intended to be applied to actors in the categories

- individuals,
- groups,
- organizations,
- communities,
- and societies.

Individuals are single human beings with characteristic traits, while the remaining types of actors are associations of individuals – their members.

---

[74] See [Burns et al. 1985]. The choice for ASD as starting point of the basic structural model of an actor was made on the grounds of the built-in systems approach that makes ASD suitable to be used in conjunction with systemic analysis. ASD has been designed to overcome the fragmentation of the social sciences and hence offers an integrative theoretical framework wide enough to describe a broad range of systems of actors as it will be required in the context of an analysis of the information environment.

[75] An actor's goals are determined by his aspirations and his perception of himself and of other actors. ASD in itself does not attempt to explain the origin of actor's goals. Neither does ASD in any form deal with individual-psychological aspects of perception or decision making.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Groups, organizations, communities and societies differ in their size, the nature of the subject that unites the members and the manner of how membership is obtained. The transition between the categories may be fluent.

- Groups are formed on the grounds of the existence of a common issue. The membership in a group is by decision of the member. Hierarchical structures do not exist or are not very pronounced.
- Organizations pursue a common goal. Usually there is a strict hierarchical structure. The members are selected by the organization in a recruitment process.
- Communities are formed by individuals that share common attributes (e.g. religion, native tongue). Typically, the membership in a community is not by choice but rather by circumstances.
- Societies consist of individuals who share a common value system (e.g. legal system). Societies often are made up by interdependent communities with a common fate, e.g. populations.

Top-Level View of the Actor Model

The actor model consists of three parts, namely the 'basic structural model' that is kept abstract, an 'analytical factors view of an actor' to be used by system analysts and a 'descriptive-status view' of an actor suitable to military advisers.


Figure: Top-Level View of the Actor Model

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010
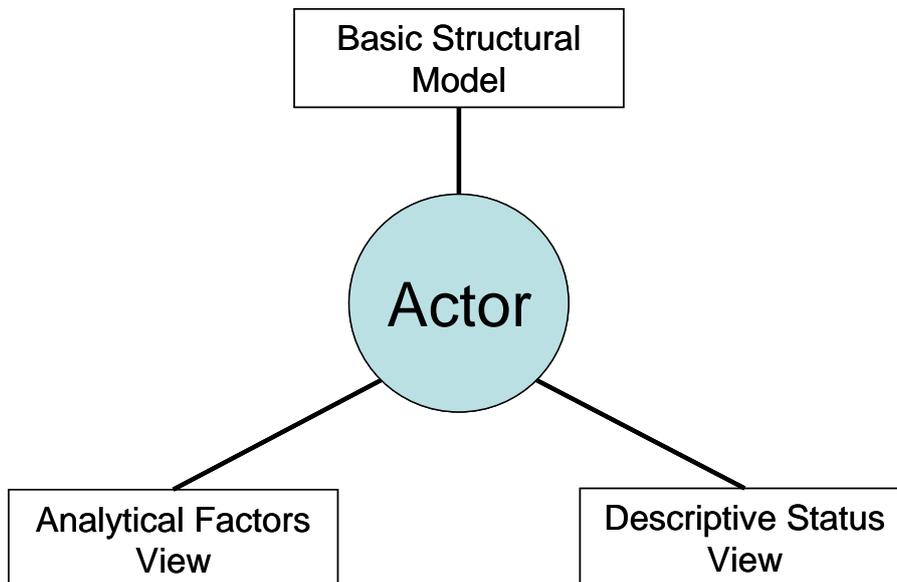
Basic Structural Model of an Actor

Figure 1: Overview of the basic structural model of an actor

The 'basic structural model' used to describe actors distinguishes four aspects (Figure) of actors that will be discussed below.

Goal System of an Actor

The basic structural model assumes that an actor pursues one or more overarching goals that arise as a result from the actor's own aspirations. However, the model does not provide mechanisms by which these aspirations can be derived from first principles. More on this topic can be found as part of the 'analytic-factor-view'.

Boundary Conditions of Actors

Each actor operates in an environment that provides resources required for life and further development of life conditions. The resources that are under the actor's control together with opportunities (e.g. the existence of markets) and constraints (e.g. the existence of competitors) restricting the actors activities constitute the physical structures.
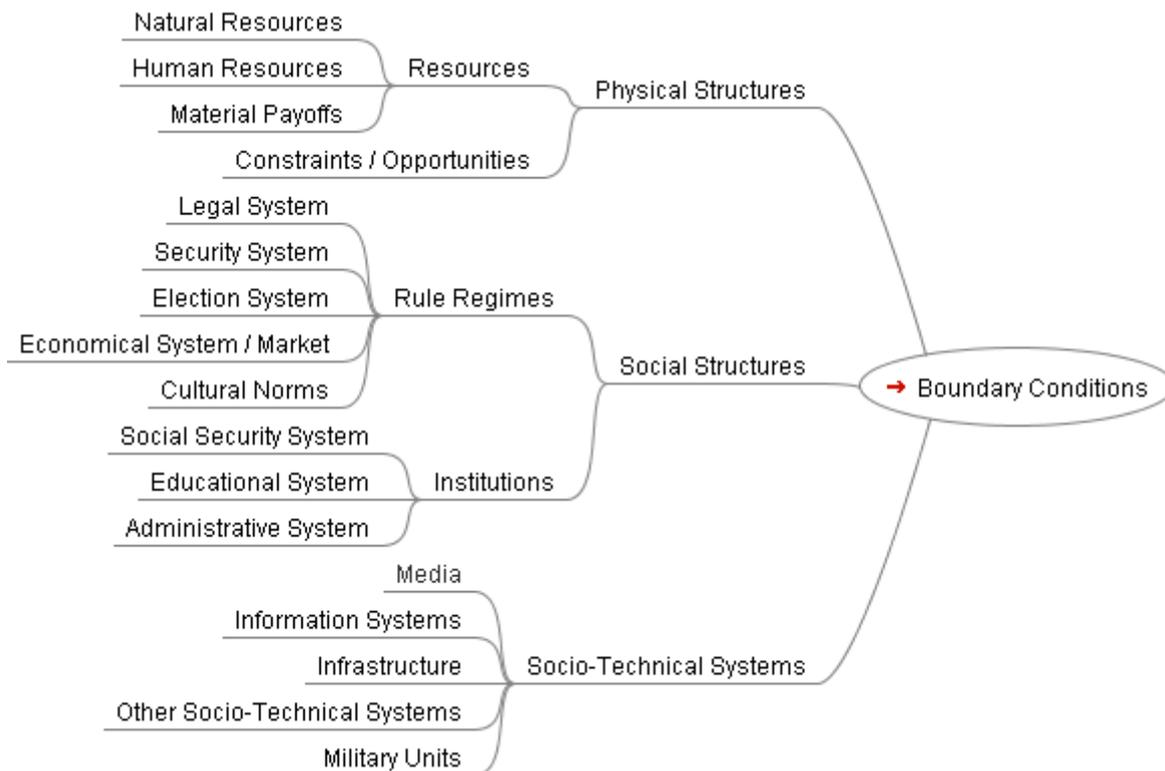

Figure: Boundary Conditions of Actors

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

In order to pursue his goals an actor needs the ability to behave actively and deliberatively. To this end, an actor establishes, maintains, and adjusts social structures that allow him to make use of his resources and to obtain material payoffs. The availability of resources as well as the occurrence of opportunities and constraints may vary over time, e.g. due to the consumption of resources or due to a change in the relationships to other actors.

In order to utilise the resources an actor has to establish social structures and to define associated rule regimes that together with corresponding institutions essentially constitute the political, economic, and cultural sectors. Social structures and resources together lead to the emergence of socio-technical systems that contribute to the capabilities of an actor. E.g., a military unit equipped with a weapon system and with the skills to employ this represents a capability in the above sense. The build-up of structures by an actor often has impacts on other actors, the setup of governmental structures and its consequences on the population of a country being an obvious example.

Processes Conducted by an Actor
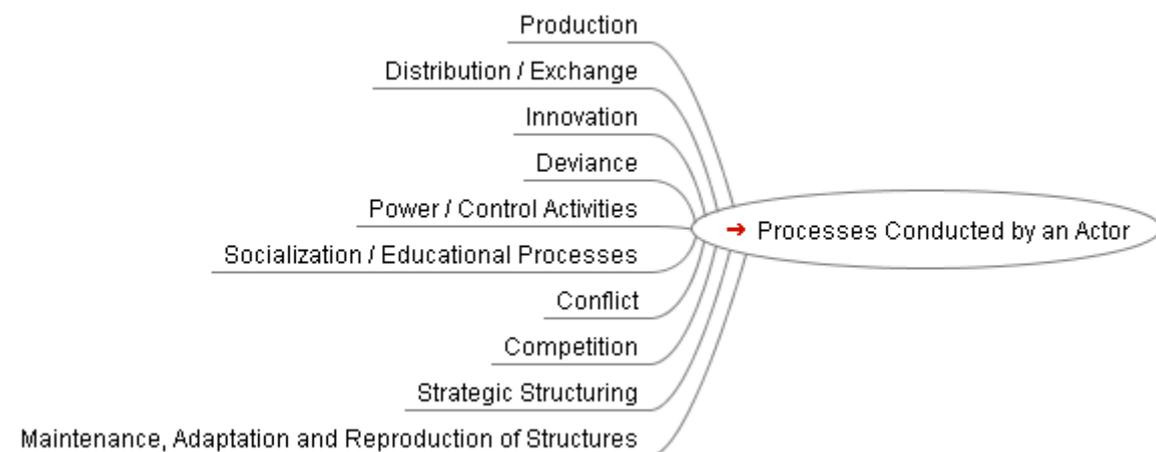
Figure: Domain Processes conducted by an Actor

The maintenance and improvement of social and physical structures are permanent tasks of an actor. Consequently, these structures are subjected to selection, adaptation, and transformation processes. As a result the socio-technical systems an actor is part of and/or has influence on will change over time as well.

Typical fields of activities that alter the physical structures are

- the improvement of time / space conditions (e.g. opening new means of communication);
- the improvement of the access to natural resources (e.g. by gaining new territory);
- the creation of opportunities (e.g. by looking for new markets);
- the removal of constraints (e.g. by fighting restraints of trade);
- the realisation of material payoffs (e.g. by trade).

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

The generic processes conducted or encountered by an actor can be categorized:

- production processes that generate goods and services;
- distribution and exchange including for example all forms of trade;
- innovation processes leading to the development and introduction of new technologies;
- deviance meaning the deliberate violation of rules that form part of one of the rule systems criminal activities being an example;
- power and control activities, e.g. the employment of armed forces on the part of a government;
- socialization and educational processes like the implementation of a school system;
- conflict-related processes, e.g. processes linked to escalation or de-escalation of conflicts;
- competition in various domains such as competition between companies or between political factions;
- strategic structuring referring to the definition and fixation of structures with strategic implications, for example the entering into an alliance or the making of strategic decisions like the pull-out from nuclear energy;
- maintenance, adaptation and reproduction of structures, e.g. the continued implementation of a legal system.

As the structural actor model is meant to be scalable from actors with sizes ranging from individuals to societies the ways actors are involved into the various processes depends on the type of the actor. For example, educational processes bear relevance to governments as well as to individuals since governments may implement educational processes by establishing, maintaining and administering schools and universities while individuals may be affected by the same educational processes as students.

Relationships between Actors

Actors necessarily interact with each other by various mechanisms:

- the mere presence of an actor affects the other actors' perception of the world;
- in addition, actors may have converging or diverging interests and hence mutually support or oppose each other.

The interactions between actors lead to the formation of mutual relationships. In turn, the interactions between actors are determined by their mutual relations. The quality of a relation arises from the degree of congruence of their interests, from the ways by which divergences in interests are reconciled, and from the results of their mutual evaluations leading to the development of opinions of and attitudes towards each other.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Figure: Domain Relationships to other Actors

The relationship between two actors can be characterized using the indicators *attitude* resp. *opinion* expressing evaluations of other actors, *orientation*, *goal congruence* and existing *power and control mechanisms*.

Evaluation of other Actor (Opinion/Attitude)

In conjunction with the relationship between two actors the development of an *attitude*[76] of the first actor towards the second actor implies that the first actor evaluates the second actor with some degree of favour or disfavour. *Opinion* is a concept that is closely related to but usually narrower in content than attitude. Opinions are also expressed in the form of evaluative statements, and as such may be part of the manifestation of attitudes.

Orientation

The dimension labelled *orientation* describes the quality of a relationship between two actors as the manner the existence of the second actor influences the decision-making and hence the actions of the first actor. Four schemata can be distinguished:

- *Self-orientation* means that the first actor evaluates options and outcomes solely on the basis of their satisfying his own goals.
- *Positive other-orientation* prevails if the first actor evaluates options and outcomes on the basis of their satisfying the goals of the second actor (using the second actor's metric).
- *Negative other-orientation* prevails if the first actor evaluates options and outcomes on the basis of their maximally counteracting the goals of the second actor (using the second actor's metric).
- *Joint self-other orientation* is present if the first actor evaluates options and outcomes on the base of his own as well as the second actor's goals.

---

[76]   The concept of *attitude* is treated in more detail by influence models in Annex C3.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

The forming of an *orientation* is the result of the first actor's judgment on the second actor. It is based on the first actor's current perception of and on the experiences with the second actor in the past.

Another attribute characterizing the relationship of actors is the *reciprocity* of their orientations towards each other. *Reciprocity* is given if the orientation of the first actor towards the second one has the same quality as that of the second actor towards the first one. A non-reciprocal relationship tends to be unstable in the long run, unless one of the actors has leverages to exert power on the other one.

Goal Congruence

Goal congruence expresses the degree to which the attainment of the goals of one of the actors furthers or even coincides with the attainment of the goals of the other one. If both actors simultaneously can successfully pursue their goals there is a convergence of goals. If the pursuit of the goal of one actor counteracts the striving of the other actor to reach his goals there is an opposition of goals.

Power and Control Mechanisms

The following schema offers a typology of general power and control mechanisms that distinguishes orienting power or influence, sanctioning power, constraint power and meta-power.

Orienting power means that an actor can structure and regulate another actor's bases for perceiving, evaluating and making decisions. Orienting power need not be absolute but can be limited to certain areas. It has two facets: control over information and control over evaluation patterns.

Control over information of an actor subsequently referred to as the first actor with respect to a second actor is characterized by that

- the first actor can influence the second actor's definition of situation, model of situation, perceptions, beliefs about action conditions, action space or outcomes,
- the first actor has (or is perceived to have) information, expertise, or special knowledge,
- the first actor can structure and regulate data and information which feeds into the second actors' decisions and actions and,
- conversely, the second actor must depend on the first actor for data and information,
- the second actor lacks ability to acquire or use these himself (at least within acceptable costs) and, moreover,
- the second actor lacks alternative sources that are perceived to be as trustworthy or competent as the first actor.

Control over evaluation pattern demands that

- the first actor has knowledge of norm and value systems and can specify appropriate goals and evaluations, or provide preference structures in appropriate settings that will be adopted by the second actor,

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

- the second actor depends on the first actor for specifying goals or making evaluations, indicating "what is best", and that
- the second actor cannot do this himself or with the aid of others (at least within his real possibilities or acceptable costs).

Sanctioning power implies that an actor can reward (remunerative power) or punish (coercive power) a second actor.

Prerequisites of *coercive power* are that

- the first actor has the possibility to deprive the second actor of some valuable he has, e.g. through control over means of destruction or
- the first actor can apply physical sanctions as infliction of pain or death
- while the second actor desires to keep valuables and cannot prevent the first actor from depriving them of it if he so decides
- and wishes to avoid physical harm, but cannot prevent the first actor from causing it.

Remunerative power implies that

- the first actor has the possibility to provide the second actor with a valuable he desires, e.g., through control over wealth
- while the second actor desires the valuable without being in a position to readily obtain it except through the first actor within his own action possibilities or acceptable costs.

Constraint power means that an actor can determine and notably restrict the range of actions a second actor has at his disposal. Indicators of constraint power are that

- the first actor has the possibility to structure or regulate the second actor's action resources, action conditions, or impose physical constraints
- and the second actor cannot prevent or avoid the first actor's limiting or determining his options for actions.

Meta-power designates an actor's capability to shape and reshape the bases of power indicated above. Governments are characteristic examples of actors that are in possession of meta-power as they may change rule systems. For example, a government taking measures to enforce competition in a certain market exerts meta-power against the companies affected by this.

Analytical Factors View on an Actor

The abstract concepts described in the 'basic structural model' manifest themselves in attributes that characterise actors in the real world. In order to thoroughly understand the information environment and how to influence it, it is mandatory to collect data and information on as many of these attributes as possible. In practice, a tailoring process will align the actual data and information requirements with the realities of the scenario.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010
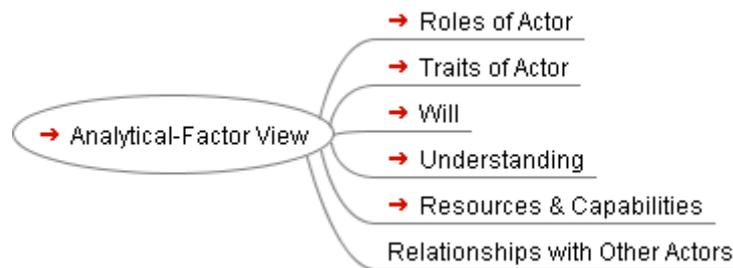
Figure: Overview of the Analytical Factors View

The information environment is embedded into the operational environment and hence a significant part of data and information on the relevant actors will be collected by other processes (and here notably Knowledge Development) that strive to gain an understanding of the operational environment. In practice, it will be advisable to distinguish between information used by military advisers and information required by system analysts. Military advisers rely on essentially descriptive information, while system analysts need more fine-grained information that can be used to select and adopt detailed sub-models. The following presentation does not explicitly distinguish between the two levels of information but rather names the type of information that is needed altogether.

The data involve static basic data on the actor as well as data characterizing the ability of the actor to act in the current situation and data describing his relationship to other actors.

The analytical-factor view of an actor comprises characterizations of his roles, his general traits, the relevant factors describing his will, factors that are related to his understanding, the resources and capabilities the actor has at his disposal and the actor's relationships with other actors.

Roles of Real-World Actors

In reality, there are many conceivable roles actors may assume. The categories of actors defined in the basic structural model provide a classification scheme of these roles. Individuals may assume several roles at the same time (e.g.: a politician who is also a company owner) where each of the roles alone makes the individual an actor.

In these cases the individual has to reconcile the aspects of the different roles, a fact that will be an ingredient to both his decision making in general and his acting in the information environment in particular and will have to be taken into account in the analysis.

By contrast, a non-individual actor is regarded as assuming a single role and pursuing a well-defined overarching goal that follows from his respective roles. This, in turn, implicitly leads to the definition of a complex objective function that covers all aspects of the actor's existence and may be considered as the basis of the actor's decisions and actions.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Typical roles of actors that will have to be taken into account as participating in the information environment are individuals in the roles of

- decision makers such as political leaders religious leaders, industrial leaders and organization leaders,
- opinion leaders or formers, e.g. journalists, publishers, spin doctors, power brokers or celebrities, or
- stakeholders like warlords or other local rulers.

Groups that possibly are treated as relevant actors typically include

- interest groups like labour unions and lobby groups,
- political groups, for example political parties or liberation movements,
- religious group,
- families,
- militia,
- guerrilla or partisan movements, and
- associations of various kinds.

Organisations that appear as relevant actors typically include

- the coalition itself,
- governmental organizations like the government itself, the armed forces of a country, the legislative body, the police or intelligence services,
- non-governmental organizations like enterprises, non-profit non-governmental organizations or criminal organizations, and
- international organizations such as intergovernmental organizations; military alliances, international financial institutions.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Roles of Individuals
- Decision Maker
  - Political Leader
  - Religious Leader
  - Industrial Leader
  - Organizational Leader
- Opinion Leader / Former
  - Political Consultant
  - Celebrity
  - Spin Doctor
  - Journalist
  - Power Broker
  - Publisher
  - Regime Critic
  - Clergy
  - Activist
- Stakeholder
  - Warlord
  - Local Ruler
  - Business Owner
  - Landowner
- Expert
  - Scientist
  - SME

Roles of Actor

Roles of Groups
- Interest Group
  - Labor Union
  - Lobby Group
- Association
- Political Group
  - Political Party
  - Liberation Movement
- Religious Group
- Family
- Militia
- Guerilla / Partisans

Roles of Organizations
- Governmental Organization
  - Legislative Body
  - Government
  - Armed Forces
  - Court
  - Police
  - Intelligence Services
- Non-Governmental Organization
  - Enterprise
  - Non-Profit Non-Governmental Organization
  - Criminal Organization
- International Organization
  - Intergovernmental Organization
  - International Financial Institution
  - Military Alliance
  - Other International Organization

Roles of Communities
- Local Community
- Clan
- Tribe
- Ethnic Group

Roles of Societies
- Population
- Social Stratum

Figure: Roles of Actors

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Communities and societies occurring as actors include
- clans,
- tribes,
- ethnic groups,
- local communities, and
- populations.

Examples of actors in various categories are given in the subsequent table.

Category	Subcategory	Example
Groups	Political parties	NCP, National Congress Party [of Sudan]
	Liberation movement	SSLM, South Sudan Liberation Movement
	Families	Karsai family
	Militia	Taliban army
	Guerrilla movement	Taliban
Organizations	Governmental organizations	Government of AFG Afghan National Army Afghan Police
	Intergovernmental organizations	UNO OAU EU OSZE NATO
	Military alliances	Allies of WW II
	International financial institutions	World Bank International Currency Fund
Community / Society	Clan	Karsai-Clan
	Tribe	Tareens
	Ethnic group	Pashtun
	Local community	Inhabitants of Kabul
	Population	Population of AFG

Table: Examples of Actors

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010
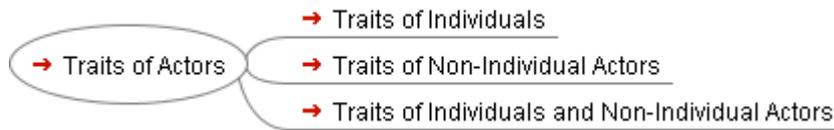
Traits of Actors

Figure: Categories of Traits of Actors

The set of traits that is appropriate to describe actors is different for actors that are individuals and actors that are made up by many individuals (such as groups or organisations). The following presentation distinguishes traits of individuals, traits of non-individuals and traits that can in principle be applied to individuals as well as to non-individuals.

Traits of Individuals

Figure: Overview of Traits of Individuals

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010
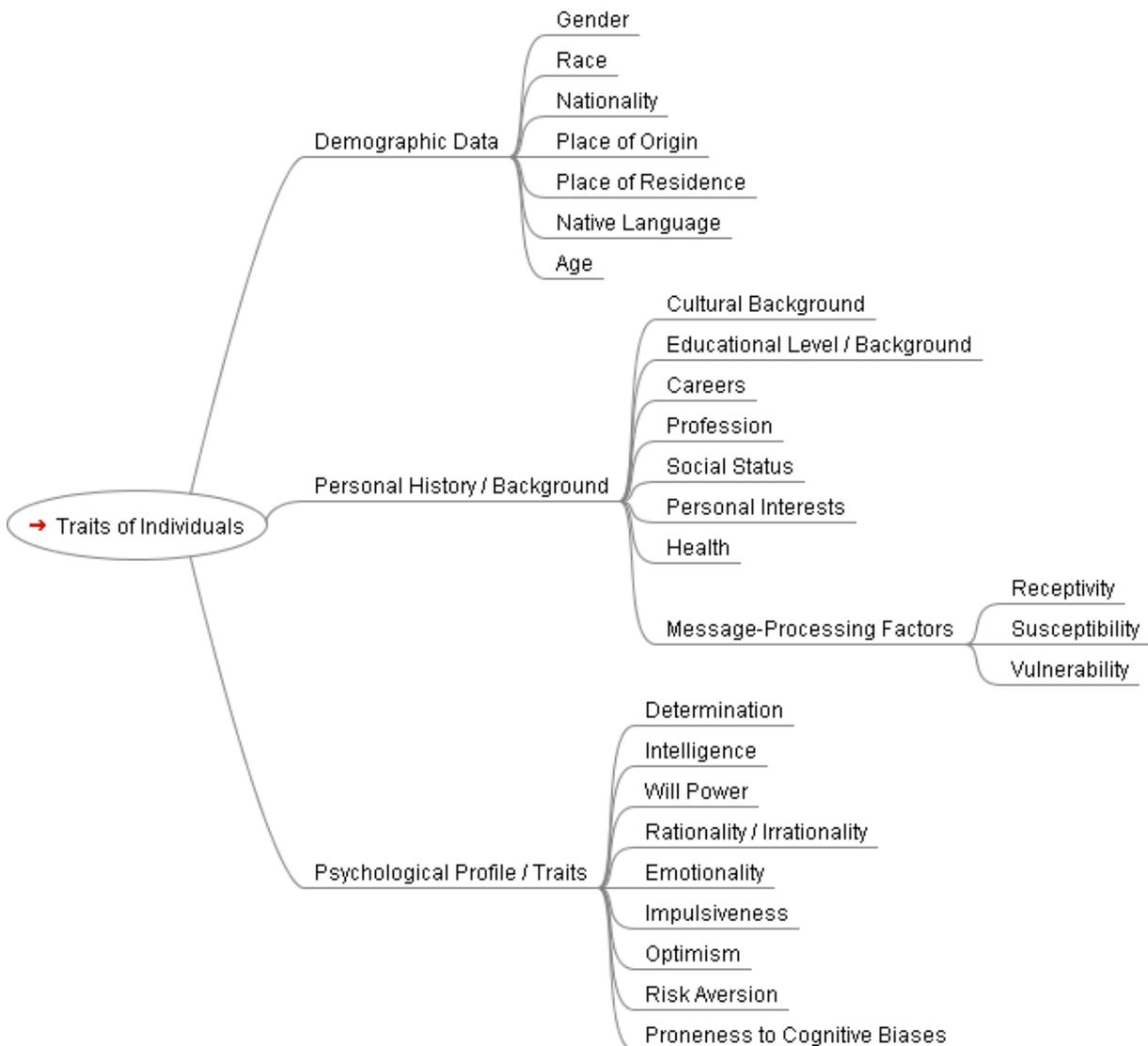
Actors that are individuals are described

- by fundamental demographic data that include the attributes shown in Figure as sub-branches of *demographic data*,

- by data on the individual's personal history and background. If an actor assumes various roles the account of his personal background should elucidate these roles together with their mutual interdependencies. Data on the personal history include

  o an account of the actor's cultural background,

  o the course of the actor's education,

  o an account of the actor's careers in various domains (e.g. professional, political),

  o the actor's profession,

  o the actor's social status,

  o a survey of the actor's state of health over time,

  o the actor's personal interests as well as

  o certain factors that describe an actor's access to information and his manner of processing it. The relevant dimensions of this are *receptivity* and *susceptibility* and *vulnerability*.

    ▪ *Receptivity* describes to which extent messages find their way to the recipient. It addresses both the technical-physical capability (e.g. availability of a TV set) and the intellectual ability (e.g. literacy, existence of pre-knowledge) of an actor to receive and understand a message.

    ▪ *Susceptibility* expresses the degree to which messages received by a person influence his or her attitudes. Susceptibility is determined by the actor and the message itself. The susceptibility of a message can be increased by choosing an appropriate manner of presentation of the message content and a suitable communicator. Here the right choice takes into account and respects the cultural background of the actor.

    ▪ *Vulnerability* refers to the degree to which certain messages touch or create anxieties or fears with an actor and thereby decrease his immunity against being influenced.

- by a psychological profile. Typical attributes to be provided here refer to parameters on the individual's general pattern of thinking, deciding and acting. Examples of such traits of individuals related to thinking in general and decision making in particular are

  o *determination* understood as a quality of mind that expresses the ability to reach definite conclusions and decisions,

  o *intelligence* addressing fundamental capabilities of the mind such as that of abstract thinking, learning, making inferences, communicating, evaluating, planning, systemizing, problem solving,

  o *will power* measuring the strength to act in the pursuit of a goal,

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

- o *rationality* describing the degree to which decisions are made based on reasoning,
- o *emotionality* describing the degree to which decisions are made based on emotions,
- o *impulsiveness* describing the inclination to act without adequate forethought,
- o *optimism* understood as the general tendency to expect a favourable course of events,
- o *risk aversion* addressing the individual's general willingness to take risks,
- o tendencies to submit to *cognitive biases*.

Traits of Non-individual Actors
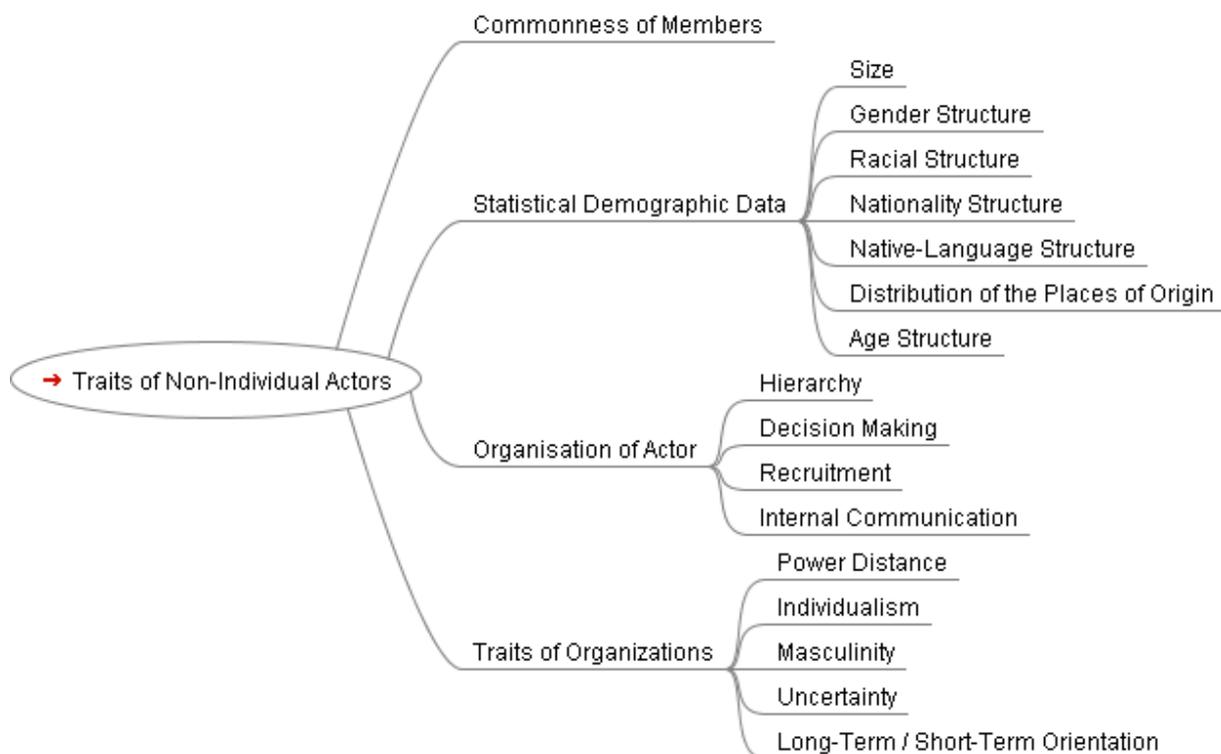
Figure: Overview of Traits of Non-Individual Actors

A fundamental property of an actor that consists of many individuals is his defining characteristics, i.e. the nature of the commonness of his members that establishes the identity of the actor. The layers on which such commonness may arise have been mentioned above in connection with the definition of the categories of actors.

Demographic data of non-individual actors include the actor's size defined as the number of his members and data describing the actor's demographic structures. Data of this kind exist in the same categories as with individuals as it is shown in the *statistical- demographic-data* branch of Figure. They can, for example, be given as the number of individuals with a specific value of an attribute expressed as percentage of all the individuals that belong to the actor (e.g. the gender structure of an actor could be 48% males and 52 % females).

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Besides that, actors with more than one member are equipped with an internal structure that may be characterized among others

– by the degree and the form of their organisation,

– by the processes that have been implemented for decision making,

– by the manner in which membership is obtained or lost and

– by additional attributes referring to internal communication such as the rules, procedures and means used there.

At the community and the societal levels the framework developed by the organizational sociologist Hofstede defines further parameter related to internal communication.[77] It identifies five basic dimensions to characterize a communication climate. These dimensions are labelled *power distance, individualism, masculinity, uncertainty, long-term/short-term orientation*.

Power distance measures dependence relationships in a community or society. If the power distance is small there is limited dependence of subordinates on superordinates and a preference for consultation, that is, interdependence between sub- and superordinates. The emotional distance between them is comparatively small: subordinates will quite readily approach and contradict their superordinates. If the power distance is large there is considerable dependence of subordinates on bosses.

Individualism pertains to societies in which the ties between individuals are loose: everyone is expected to look after himself and his immediate family. The opposite is *collectivism* that pertains to societies in which people from birth onwards are integrated into strong cohesive ingroups, which throughout people's lifetime continue to protect them in exchange for unquestioning loyalty.

Masculinity pertains to societies in which social gender roles are clearly distinct (i.e. men are supposed to be assertive, tough and focused on material success, whereas women are supposed to be more modest, tender and concerned with the quality of life). *Femininity* pertains to societies in which social gender roles overlap (i.e. both men and woman are supposed to be modest, tender and concerned with the quality of life).

Uncertainty avoidance can be defined as the extent to which the members of a culture feel threatened by uncertain or unknown situations. This feeling is, among other things, expressed through nervous stress and in a need for predictability, i.e. a need for written and unwritten rules.

Long-term orientation stands for the fostering of virtues oriented to future rewards, in particular perseverance and thrift. *Short-term orientation* stands for the fostering of virtues related to the past and the present, in particular respect for tradition, preservation of face and fulfilling social obligations.

---

[77]   [Hofstede 1991].

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

## *Traits of Individuals and Non-individuals*
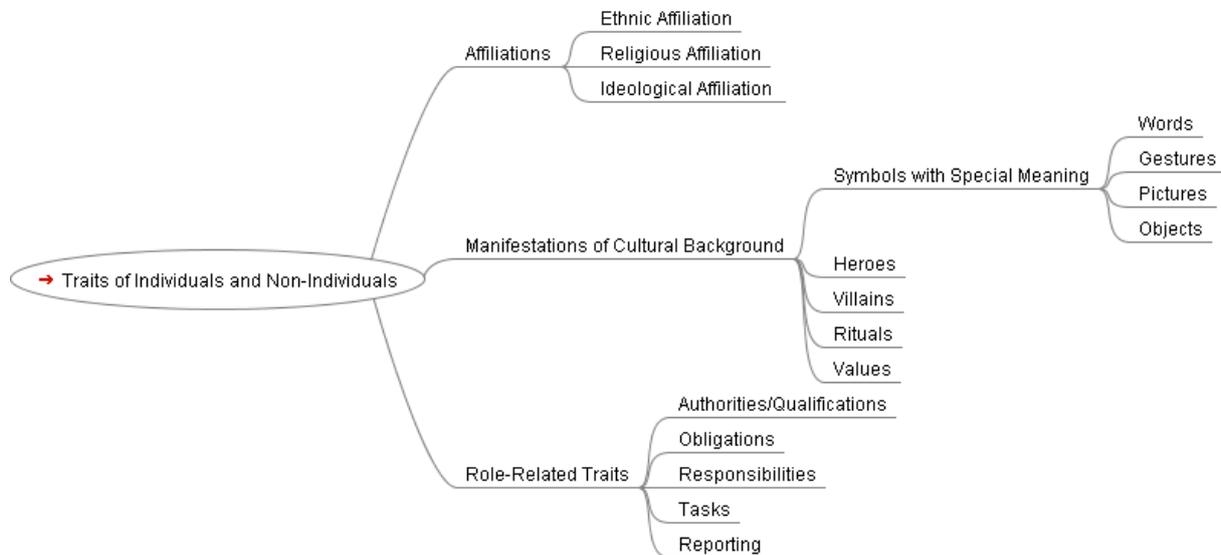
Figure: Overview of Traits of Individuals and Non-Individuals

Certain traits can be used to describe an actor independent from the number of individuals contained in him. This involves as shown in Figure:

- the actor's affiliations in the fields
  - ethnicity,
  - religion,
  - ideology.

- the manifestations of the actor's cultural background. Typical forms of this are
  - symbols like words, gestures, pictures, or objects that carry a particular meaning to those who share a particular culture,
  - heroes, thus persons, past or present, real or fictitious, who possess characteristics that are highly prized in a culture and also may serve as models for behavior,
  - villains, thus the opposite of heroes,
  - rituals, this is to say collective activities that are sometimes superfluous in reaching desired objectives, but are considered as socially essential and that are therefore carried out most of the times for their own sake (ways of greetings, paying respect to others, religious and social ceremonies, etc.),
  - values expressing consciously or unconsciously tendencies for preferences of certain state of affairs to others (e.g. good-evil, right-wrong, natural-unnatural).

- the actor's features that are associated to his role and influence the actor's behaviour as part of the system. The actor's role may
  - induce authorities and qualifications,
  - imply obligations against others,
  - entail responsibilities,

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

o imply the carrying out of tasks,

o entail forming a part of a reporting system (e.g. through reporting duties).

Will, Understanding, and Capabilities

The basic goal of the analysis and the shaping of the information environment is to understand and to influence the various actors' perception, decision-making and finally and most important acting. Acting is eventually based on the will to act, on an understanding of the situation that directs in which way to act and on capabilities that permit to act. Therefore a description of an actor must address the factors that determine *will*, *situational understanding* and *capabilities.*

Will
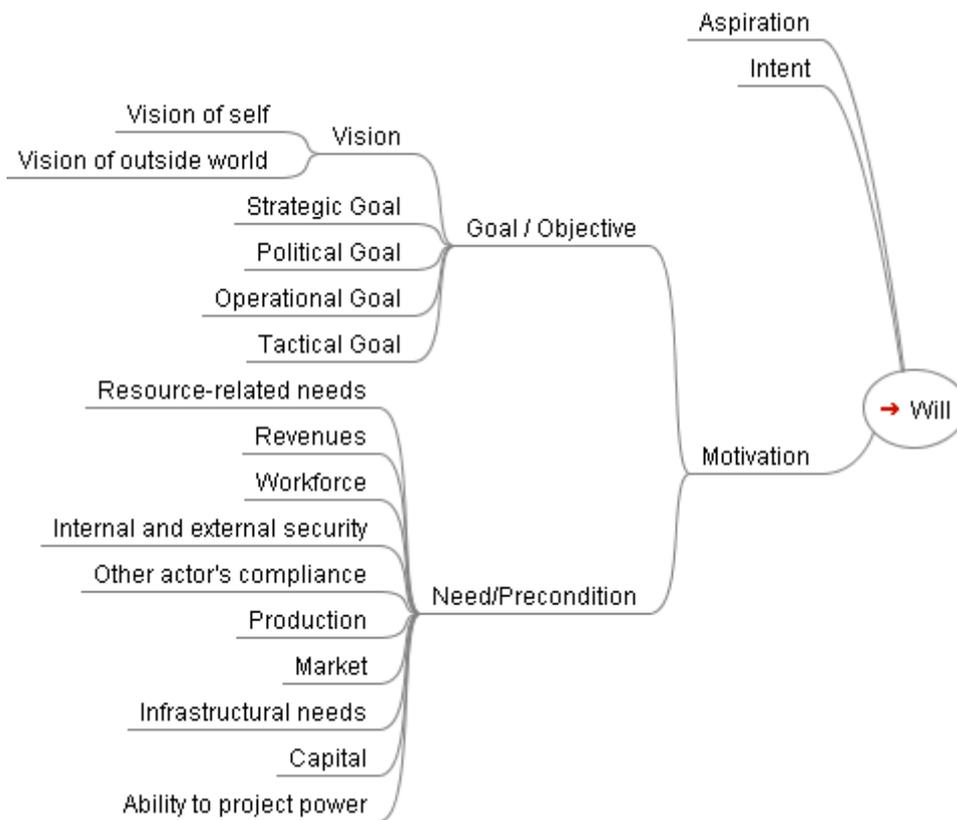
Figure: Concepts Related to Will

Aspiration

An important part of the information to be collected refers to the ultimate driving forces that determine the direction of the actor's actions. The fundamental information in this area comprises the actor's aspiration or ambition that may be understood as the actor's visions of himself, of the outside world and of his position in relation to the outside world. These visions contain the achievements the actor wants to make, the extension of his sphere of influence he aims at, the structures he wants to implement in his sphere of influence, the degree of influence he wants to exert, the role and the position he sees for himself in the world absolute and relative to others.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Goals of an Actor

The aspirations or ambitions of an actor are operationalised and broken down into a goal system, i.e. into a consistent hierarchy of goals and objectives that are situated at different levels and different time-scales and may have different priorities giving rise to a distinction of primary and secondary goals. Depending on the level a goal or an objective is defined on and bears consequences to a distinction of *strategic (long-term)*, *political*, *operational (mid-term)* and *tactical (short-term) objectives* is appropriate. Objectives and goals may be formulated in various domains, for example influence, power, economy or security.

Needs/ Demands of an Actor

The continued existence of an actor and the attainment of his objectives are linked to the satisfaction of certain needs or the satisfaction of certain boundary conditions. Categories of such demands are

- the access to and availability of natural resources,
- sufficient generation of revenues,
- the existence of a sufficient workforce,
- the attainment of a definite level of internal and external security,
- certainty with respect to the stability and controllability of (boundary) conditions,
- compliance on the part of other actors in certain respects,
- the attainment of a definite production level,
- the existence of and accessibility to markets,
- the existence of an infrastructure,
- the absence of subversion,
- the ability to project power,
- recognition by others.

Knowledge of the needs of an actor together with an assessment of the degree of their fulfilment and of their criticality to the actor and knowledge of the means by which the actor ensures the satisfaction of his needs are the keys to an understanding of the actor's goals, objectives and motives.

Decisions

Ultimately, will is reflected in decisions. The manner, in which the intermediate process of decision making is implemented, depends on the traits of the actor. Depending on the manner of reasoning employed decision making can be to a varying degree a reasoning or emotional, a rational or irrational process.

Understanding
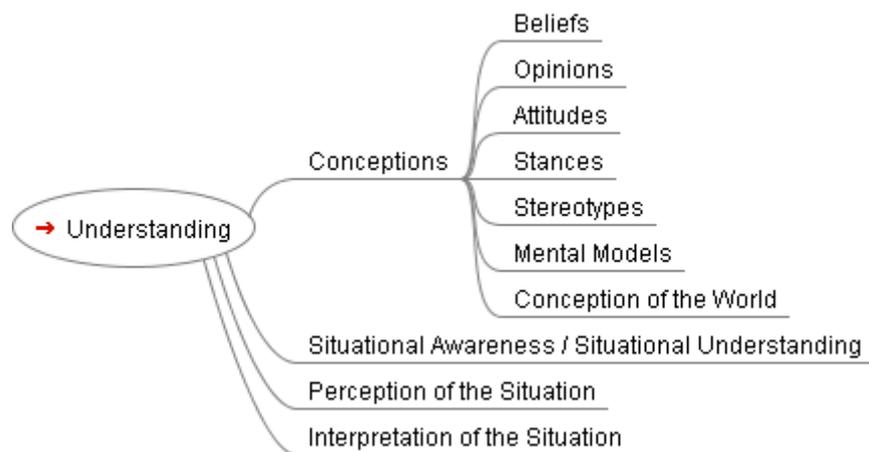
Figure: Concepts Related to Understanding

Understanding develops as result of the concurrence of the actor's perception and thinking within the reality the actor operates.

This implies the evolvement of mental representations of certain elementary aspects of the world. Mental representations lead to the emergence of beliefs[78], opinions, attitudes, stances[79], stereotypes[80] and of more complex mental models[81] up to a comprehensive conception of the world.

From an operational point of view relevant terms related to understanding are situational awareness and situational understanding. In order to pursue his goals an actor needs to permanently take stock of the degree to which reality and vision match and the direction in which reality changes. His capability to perform these two tasks determines the quality of his situational understanding and of his situational awareness and the validity of his perception and his understanding of a given situation.

The information environment is essential to both, as an actor has to rely on his perception of reality instead of on reality itself. Therefore an actor's situational understanding of the current situation and of hypothetical future situations is determined by his way of information processing, that is by the way he perceives and interprets facts and messages. In a concrete situation an actor's situational awareness and understanding result in his perception and interpretation of the situation.[82]

---

[78] A belief is a proposition firmly held to be true.

[79] Stance denotes a position taken with respect to an issue.

[80] Stereotypes are beliefs on groups made up by specific types of individuals.

[81] Mental models are models in an individual's mind that refer to the factors and mechanisms underlying certain aspects of the world.

[82] The path from perception to actions over the development of attitudes and opinions to the forming of behaviour will be dealt with in models originating from social psychological theories.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Resources and Capabilities

An actor's _capabilities_ are the means he has at his disposal in order to pursue his goals. They can be structured at the highest level using the PMESII domains. They serve the grouping the information on an actor that will be amassed over time. To fully understand the capabilities of an actor and their origins it will be necessary to establish links between pieces of information belonging to different domains.

Capabilities outside the Domain 'Information'
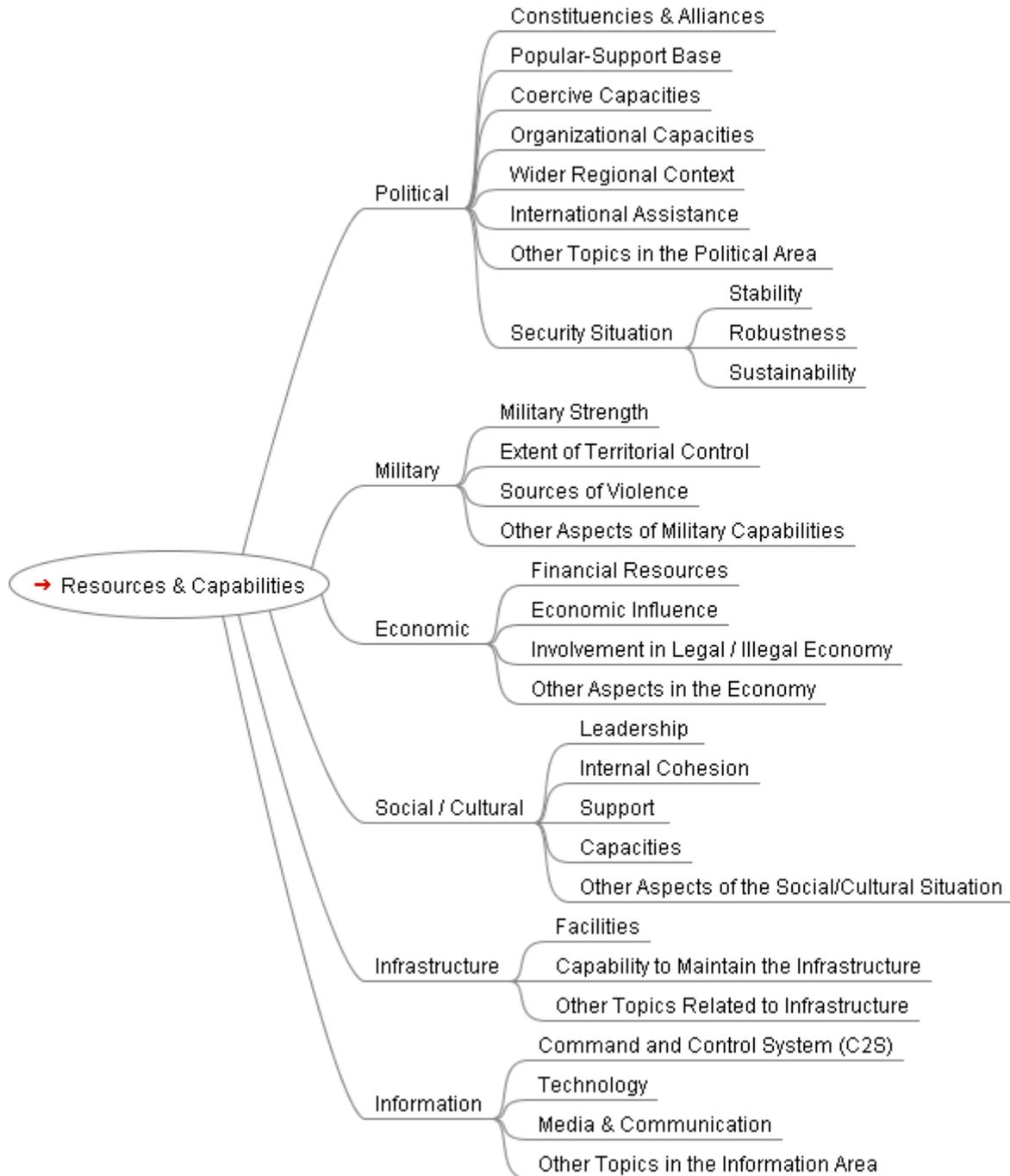
Figure: Overview of Resources and Capabilities of an Actor

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Specifically, the description of the political domain should contain

- a description of actor's followers and co-operations, tacit and explicit agreements and partners,
- the actor's actual reserve in certain parts of the population, may it be high society, certain ethnic groups, clans, religious groups, pools of recruitment, or any other following populace,
- the actor's options to exert leverage on another actor, e.g. to stress somebody,
- a characterization and a detailed picture of organizationally linked capacities,
- actor's position and capabilities in the realm of a wider geopolitical context; i.e. out of its immediate area of influence, e.g. neighbouring countries,
- a description of actual supporting relationships at international level,
- a description of any other notable facts influencing the actor's behaviour in the political domain.

A description of the actor's state with respect to the military domain should provide

- a quantification or reference of an actor's standing military forces or the capacity for fulfilment of that military's role expressing the actor's military strength (e.g. as the number of individuals in its armed forces, the destructive potential of its arsenal, or both),
- information on dimension and intensity of geopolitical influence and of possibilities to dictate, filter and channel actions in a defined area,
- a description of origins (reasons), powers, patterns of and the logic behind manifestations of the actor's military power including an identification of persons, groups and organizations involved in this and
- an account of any other notable facts referring to the actor's capabilities in the military domain.

The information on the actor's state in the economic domain typically comprises

- a description of his financial foundations, e.g. investments, account status, owned or applied shares,
- a description of the extent of economic influence of the actor, e.g. through the number of employees, relevant economic sectors, affiliated corporations, business partners,
- a characterisation of the actor's business practices,
- a description of his economic behaviour in different markets,
- an account of any involvement in illegal business
- any other notable facts referring to the actor's role in the economic domain.

The characterisation of the actor's position in the social domain may address

- the actor's role as social or cultural leader, public vote or opinion leader,
- the extent of the social solidarity on the one hand and of internal social conflicts on the other hand,
- social or cultural projects, facilities, groups and so on being supported or maintained by the actor,

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

– social or cultural projects, facilities, groups and so on supporting the actor,

– personnel and materiel required to maintain the actor's general set-up in this domain and the costs associated with this,

– any other relevant fact furthering or constraining the actor's acting in the social domain.

The role of the infrastructure domain to an actor's capabilities can be described in terms of

– descriptions and geographical locations of facilities that are of relevance to the capabilities of the actor,

– the origins of their relevance,

– the organizational structures that have been built-up to operate and maintain the facilities together with

– an estimate of the costs of this.

Capabilities in the Domain 'Information'

The capabilities of an actor in the domain 'information' are determined by various factors:

– The actor's capability to set up a legal, policy and regulatory framework for the work of media that either protects and promotes or impedes freedom of expression and information.

– The actor's opportunities to make use of and to influence media through his direct and indirect involvement in media systems. Roles of actors that entail such an involvement and make especially mass media capabilities are

   o media owner, shareholder or financer,

   o editor,

   o journalist,

   o customer (e.g. advertising customer),

– The various facets mass media may have and the manner in which an actor makes use of them.

   o Mass media are journalistic entities. This aspect focuses to the quality of journalistic work and of professional ethics, and here notably obedience of the principles of truthfulness, accuracy, objectivity, impartiality, fairness and public accountability in journalism,

   o Mass media are commercial entities emphasizing the striving after commercial success, i.e. high circulation and success in selling of media space or airtime,

   o Mass media are property and as a consequence instrumental to directly shape the IE according to the will of their owners or shareholders.

– The actor's principal sources of information with

   o his attitude towards the source,

   o procedures of access to the source,

   o technical and infrastructural preconditions for the access to the source,

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

- o degree of control of trustworthiness on part of actor
- − The media used by the actor for internal communication with descriptions of
  - o the regulations for access to the media,
  - o the decision processes that are supported by the media,
  - o the degree of and the measures taken to ensure security of the communication,
- − The media used by the actor for external communication with descriptions of
  - o the degree of presence of the actor in the media,
  - o media used as the actor's mouthpiece,
  - o media used to influence public opinions,
  - o practices used to shape the information environment,
  - o by employing functions of mass media as described in the media landscape model,
  - o by putting out, biasing or suppressing media content.
- − Information system tools and technology available to the actor.

Foci of analysis are the identification of structures and processes the actor depends on, real or perceived threats to these structures, the actor's dependence on the cooperation of other actors and the mechanisms used to ensure or enforce the existence of the cooperation. These define subjects of particular relevance and hence concern that must been paid special heed to when acting in the information environment.

Relationships to Other Actors from the 'Analytical Factors View'

Figure: Factors of an Actor's Relations to Other Actors

The nature of the description of an actor's relationship to other actors does not differ from that one of the basic structural model and shall not be repeated here in detail. The principal categories are shown as a reminder in Figure.

Descriptive-Status View

The descriptive-status view aims at providing a condensed picture of an actor's state with special focus on the information environment. It is intended to be used in situational briefings given by military advisers. The content of a descriptive-status view will depend on the command level where it is used. It should be worked out by the analyst and the military adviser jointly. The possible range of topics covered coincides with that of the analytical-factors view.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Information System Model

The information environment is defined as the virtual and physical space, in which information is received, processed and conveyed. It consists of the information itself and information systems.

Therefore, information systems are obviously a central element of the information environment. The 'information system model' outlined by this concept is intended to be 'scalable' in that it represents an 'information system' of an actor. Following the actor model of this concept an actor can be an individual or a non-individual such as an organisation or even a society. I.e., 'scalable' means that the 'information system model' should work for individuals as well as organisations and other actors.

The definition for information systems serves as a starting point for the model: Information systems are defined as socio-technical systems for the collection, processing and dissemination of information. They comprise personnel, technical components, organisational structures, and processes that create, collect, perceive, analyse, assess, structure, manipulate, store, retrieve, display, share, transmit and disseminate information.

Thus, (human and technical) elements of information systems are:

– personnel
– technical components
– organisational structures
– processes

These elements differ for individuals and non-individual actors (see below). In the case of an individual an actor can be interpreted as an information system itself – with or even without technical equipment. The information system of an organisation is composed of the information systems of its members and the specific organisational elements of this system, including e.g., the computer network, phones, and management information systems. E.g., communication and information systems (CIS) as well as command and control systems (C2S) are typical elements of the information system of a military (analogous civil) organisation.

Functions of information systems are (in brackets more detailed):

– collection (reception)
– processing (perceive, analyse, assess, structure, manipulate, create, store, and retrieve)
– dissemination (transmit)

The following model comprises these functions and related elements.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010
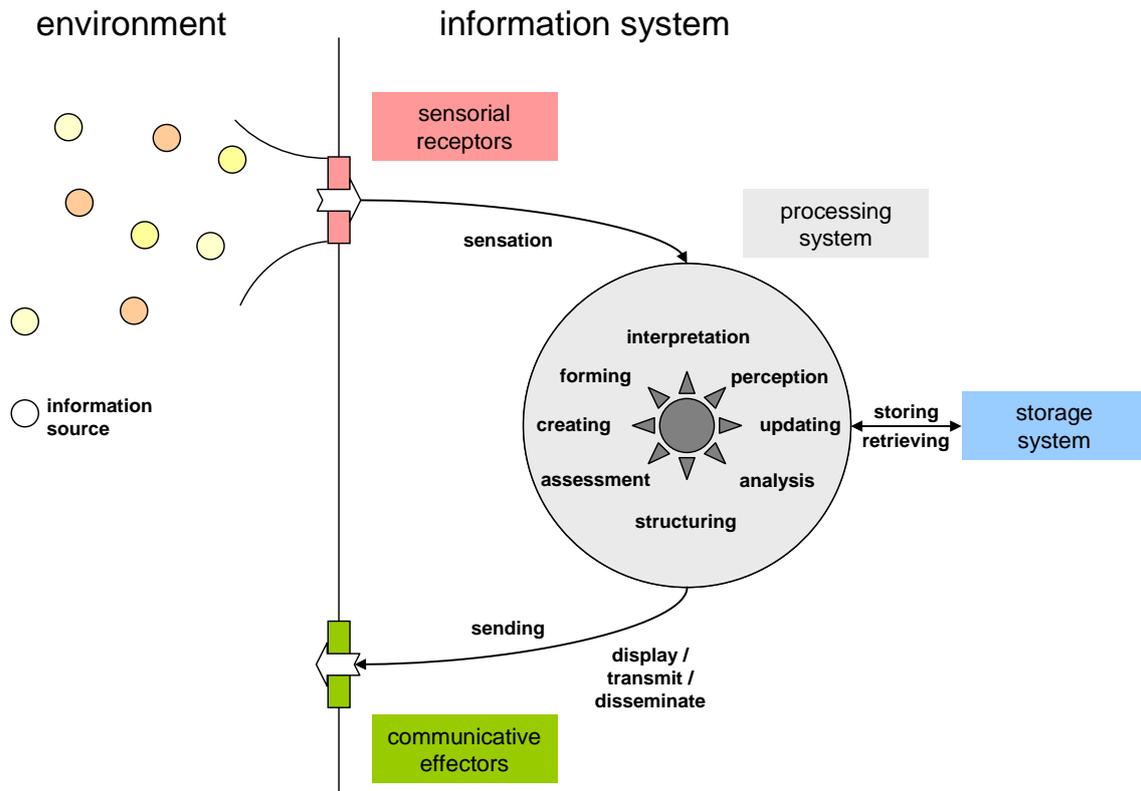
Figure: Information System of an Actor

Sensorial receptors are the 'input ports' of an information system. In case of human elements they refer to human senses (the traditional senses are sight, hearing, touch, smell and taste).[83] Technical sensors include optical, acoustic, biometric, and many other types of sensors. The sensorial receptors of an actor's information system comprise all kinds of access to other actors' information systems, including access to the media. In this sense a person's radio receiver can be interpreted as a technical receptor to 'sense' information from the media system.

Sensation comprises the impulse of stimulated sensory receptors of and its interpretation by an organism. From making use of this interpretation perception originates.[84] The *processing system* interprets the available data and information and processes these in many sub-processes and variations. Information processing of actors is a subject for respective process models and influence models.

The *storage system* is used to store and retrieve data and information. In case of a human being this would be his brain plus respective technical equipment he possesses for storing as well as any other kind of storage device (such as books). For non-individual actors this includes, e.g., the 'collective memory' of an organisation.

---

[83]   Other senses may refer to pain, balance, temperature, direction, joint motion and acceleration, or sense of time. Depending on the application area additional senses may be included.

[84]   Based on [AlleyDog.com 2010]

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Communicative effectors are used as the collective term for sending elements, i.e., all (human and technical) assets and equipment that can be used to 'send' (display, transmit, or disseminate) information. They can use various channels and media.

For analysis purposes according to internal and external communication processes an internal and an external part of the information system should be differentiated as not everything created, processes, or disseminated is shared by the actor with other actors or his environment.

Figure: Information System and Communication Process

The 'information system model' fits into the 'elementary communication model' as the actors involved in the communication process can be substantiated by their 'information systems'.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Media Landscape Model

While creating and executing a campaign plan that achieves the end-state one of the challenges a multinational Commander is faced with is media management.[85] This requires a subtle and in-depth understanding of relevant structures and processes of the media landscape.

"The media landscape is changing rapidly under the impact of technological, economic, regulatory and political developments of crucial importance. The most characteristic and far-reaching of these changes are:

- the multiplication of media outlets;
- the advent of the Internet and the creation of cyberspace;
- the increased ability of individuals to produce content and disseminate information;
- the rapid growth of media companies, the internationalisation and differentiation of their activities leading to concentration of capital in many sectors of the industry;
- the emergence of a new communication paradigm characterized by connectivity, interactivity and convergence that tends to replace the mass communication paradigm that dominated during the 20th century;
- the new communication paradigm is 'hyper textual' in the sense that several devices, analogical or digital, connect to each other: thus, it is characterized by the fusion of interpersonal communication and mass communication, connecting audiences, broadcasters and publishers under a 'hyper textual' matrix linking several media devices (from newspapers to videogames).

As a result of these changes we have moved away from the structured media environment of the 1970s and early 1980s into a rapidly changing, even chaotic media environment."[86]

Top-Level View of the Media Landscape

The media landscape (ML) is handled as a composition of elements, i.e. a system within the information environment.
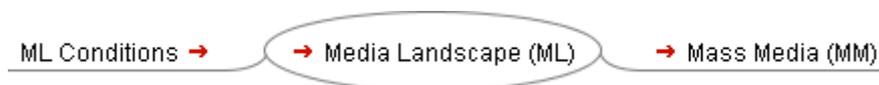

Figure: Top-Level View of the Media Landscape

The media landscape consists of mass media[87] (MM) and is linked to conditions ('ML Conditions') which form the context of the media landscape and substantially affect

---

[85] [Lane 2006].

[86] [MNE 6 GRE 2010].

[87] In communication, a medium is the storage and transmission channel or tool used to store and deliver information or data. The plural term media is often referred to as synonymous with mass media or news media, but may also refer to a single medium used to communicate any data for any purpose. Mass media denote a section of media specifically designed to reach a large public audience.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

mass media, e.g., political conditions ensuring freedom of expression or infrastructural conditions like the availability of electrical power supply.
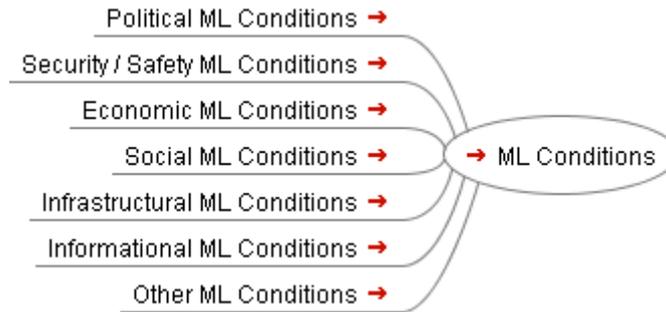

Figure: Media Landscape Conditions

These media landscape related conditions are structured using a slightly adjusted PMESII[88] view.
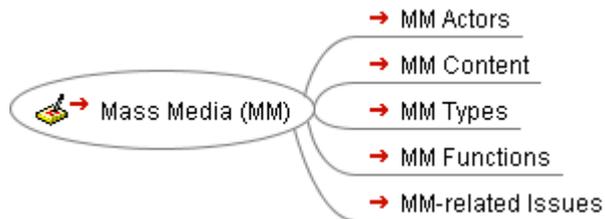
Figure: Mass Media

The model structures the mass media by actors, content, types, functions, and related issues.

Each of the branches related to 'media landscape conditions' or 'mass media' is described in detail in the following sections.

---

[88] The PMESII (political, military, economic, social, infrastructural, and informational systems) construct is often used for structuring the operational environment (e.g., [NATO KDH 2010]).

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Media Landscape Conditions

Political Media Landscape Conditions
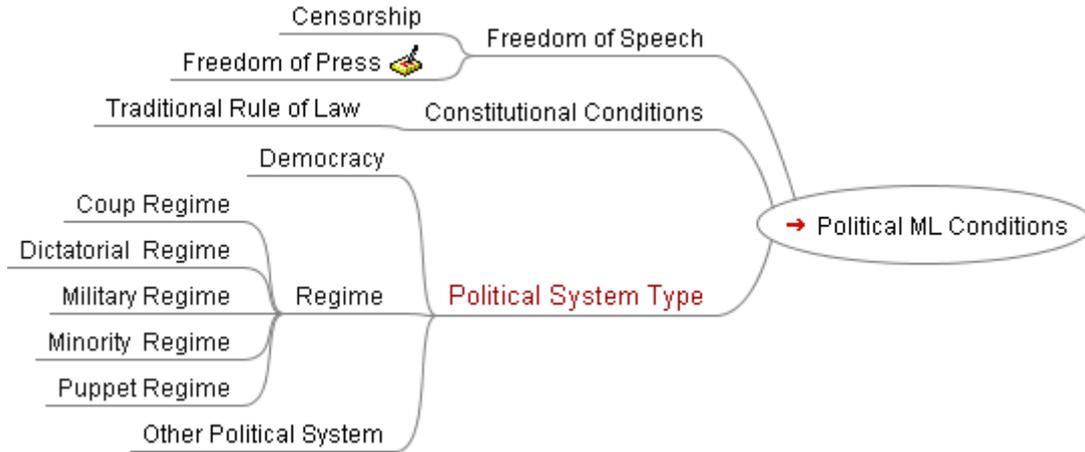
Figure: Political Media Landscape Conditions

Political media landscape conditions include the 'type of political system' (such as democracy, different types of regimes, or monarchy), 'constitutional conditions', and 'freedom of speech' as decisive aspects of the political context.

Media Landscape Security/Safety Conditions
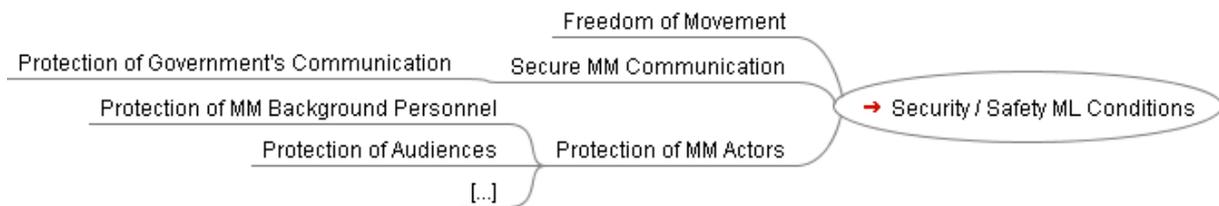
Figure: Security / Safety Media Landscape Conditions

In Western countries the linkage between the media and military conditions is not substantial. In other cultural areas the influence of military conditions may play a role. Such security/safety related media landscape conditions may appear in terms of the military 'protection of governmental communication' assets or other safety aspects such as any security-caused restrictions to 'freedom of movement', 'secure mass media communication', and the 'protection of mass media actors'.

Economic Media Landscape Conditions

Figure: Economic Media Landscape Conditions

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Economic media landscape conditions include 'finances' (i.e., media-related money flows, e.g., regarding corruption and investigative journalism), and the 'job-market' (e.g., regarding critical journalists).

Social Media Landscape Conditions
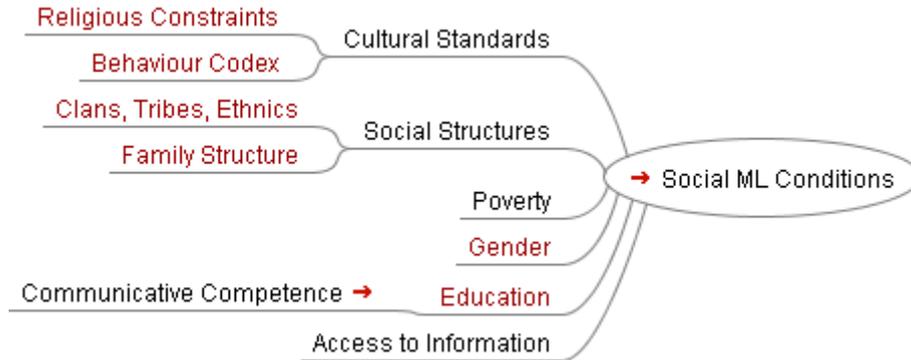
Figure: Social Media Landscape Conditions

Social media landscape conditions include 'cultural standards' (such as religious constraints and behaviour codex), 'social structures', and factors relevant for the role of the media in the society, e.g., the access to information, or aspects such as poverty, gender, or education.

Communicative Competence

A determining factor for the role of the media in an information environment is the level of 'communicative competence' of the people/audiences. 'Communicative competence' comprises the dimensions of 'media literacy' and 'intercultural communicative competence'[89].

Figure: Communicative Competence

'Media literacy' aims at successfully using media and media-related technology: "We have defined media literacy as: 'the ability to access, understand and create communications in a variety of contexts'. [...] Media literacy has parallels with traditional literacy; the ability to read and write text. Media literacy is the ability to 'read' and 'write' audiovisual information rather than text. At its simplest level media literacy is the ability to use a range of media and be able to understand the information received. At a more advanced level it moves from recognising and comprehending information to the higher order critical thinking skills such as questioning, analysing and evaluating that information. This aspect of media literacy

---

[89] 'Intercultural communicative competence' is the ability of a person to behave adequately and in a flexible manner when confronted with actions, attitudes and expectations of representatives of foreign cultures (Meinert Meyer cited in [MNE6 FC 2010], p.51.). The concept of 'intercultural communicative competence' is discussed in more detail in [MNE FC 2010].

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

is sometimes referred to as 'critical viewing' or 'critical analysis'. A media literate person should be able to, for instance, use an electronic programme guide to find the programme they want to watch. They may agree or not with the views of the programme maker, or just enjoy the programme. They may also recognise that the programme maker is trying to influence them in some way. They may interact with the programme using interactive features or by telephone. And they may respond to the programme by writing to or emailing the broadcaster with their point of view. People may also be able to use communications technology to create their own video and audio content. Media literate people should be able to use the internet to find information and accept that sometimes what they find may represent a particular view rather than a statement of objective fact. They will be able to control what they and their children see to avoid being offended. They may also be confident enough to be able to order and pay for goods and services online and to create their own website and contribute to a chat room discussion."[90]

Informational Media Landscape Conditions

Figure: Informational Media Landscape Conditions

Informational media landscape conditions focus on alternative ways of communication regarding mass communication, i.e. other than by mass media. E.g., in many pre-industrial and underdeveloped countries 'word of mouth' appears to be more important to the transmission of messages in the eyes of the population than typical mass media communication channels which may possibly be controlled by corrupt regimes and their administrative bodies. Alternative media outlets are very special and member-oriented media, e.g., papers of societies, and private club media.

Infrastructural Media Landscape Conditions

Figure: Infrastructural ML Conditions

Infrastructure plays an important role for the functionality and reliability of mass media (details see figure below). 'Technical MM equipment' covers issues like, e.g.,

---

[90]   Internet: http://www.ofcom.org.uk/advice/media_literacy/of_med_lit/whatis/, seen 19 April 2010.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

availability of devices such as receiving units (e.g., TV sets or radio receivers). Since the ownership of a TV set cannot be taken for granted in emerging countries, the possibility of watching political news programs may vary at remarkable levels. On the other hand, the availability of mobile phones (as mass media platforms) will increase in the future.[91] 'Facilities and venues' include typical media locations, like media production facilities (e.g., post-production studio) and others (e.g., newspaper kiosk, photo archive, or internet cafe).
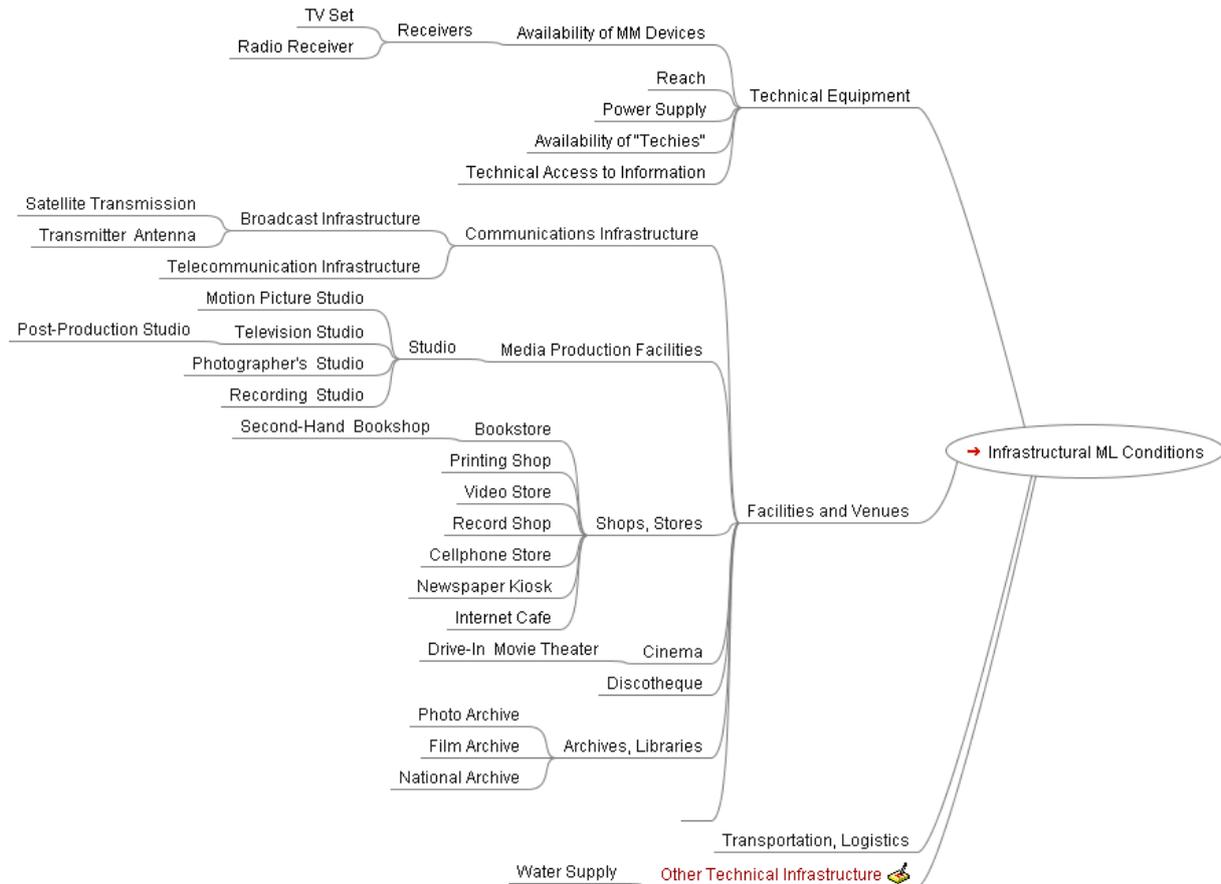
Figure: Facilities and Venues as Infrastructural ML Conditions

---

[91] It is worthwhile to look at today's role of mobile phones in the media landscape: "The Mobile phone became a mass media channel in 1998 when the first ringtones were sold to mobile phones by Radiolinja in Finland. Soon other media content appeared such as news, videogames, jokes, horoscopes, TV content and advertising. […] The mobile phone is often called the Fourth Screen (if counting cinema, TV and PC screens as the first three) or Third Screen (counting only TV and PC screens). It is also called the Seventh of the Mass Media (with Print, Recordings, Cinema, Radio, TV and Internet the first six). Most early content for mobile tended to be copies of legacy media, such as the banner advertisement or the TV news highlight video clip. Recently unique content for mobile has been emerging, from the ringing tones and ringback tones in music to "mobisodes," video content that has been produced exclusively for mobile phones." (Internet: http://en.wikipedia.org/wiki/Mobile_phone, seen 10 August 2010)

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Mass Media

The mass media are structured by actors, content, types, functions, and related issues.

Mass Media Actors

Figure: Mass Media Actors

'Mass Media Actors' cover organisational entities, background personnel (e.g., journalists like photographers, meteorologists, commentators, reporters, columnists), foreground personnel (e.g., anchormen, talkmaster), audiences (e.g., target audiences), and other mass media related actors (e.g., sellers like paper boys and book salesmen).

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010
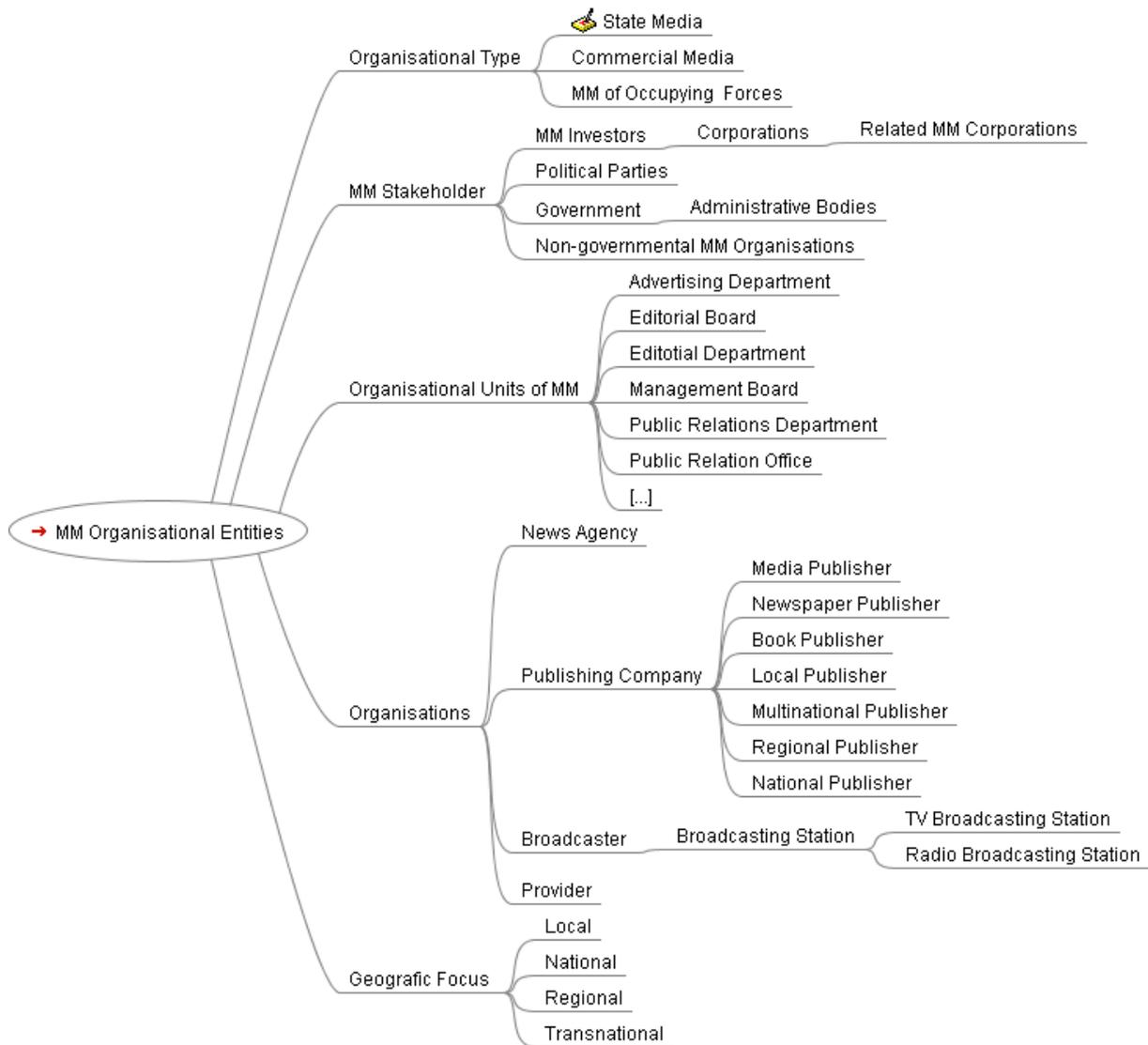
Figure: Mass Media Organisational Entities

'Organisational Entities' refer to organisational forms and types of mass media related entities like organisational types (e.g., state media), stakeholder (e.g., investors), organisational units (e.g., editorial board), organisations (e.g., news agency), and geographic focus (e.g., national).

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010
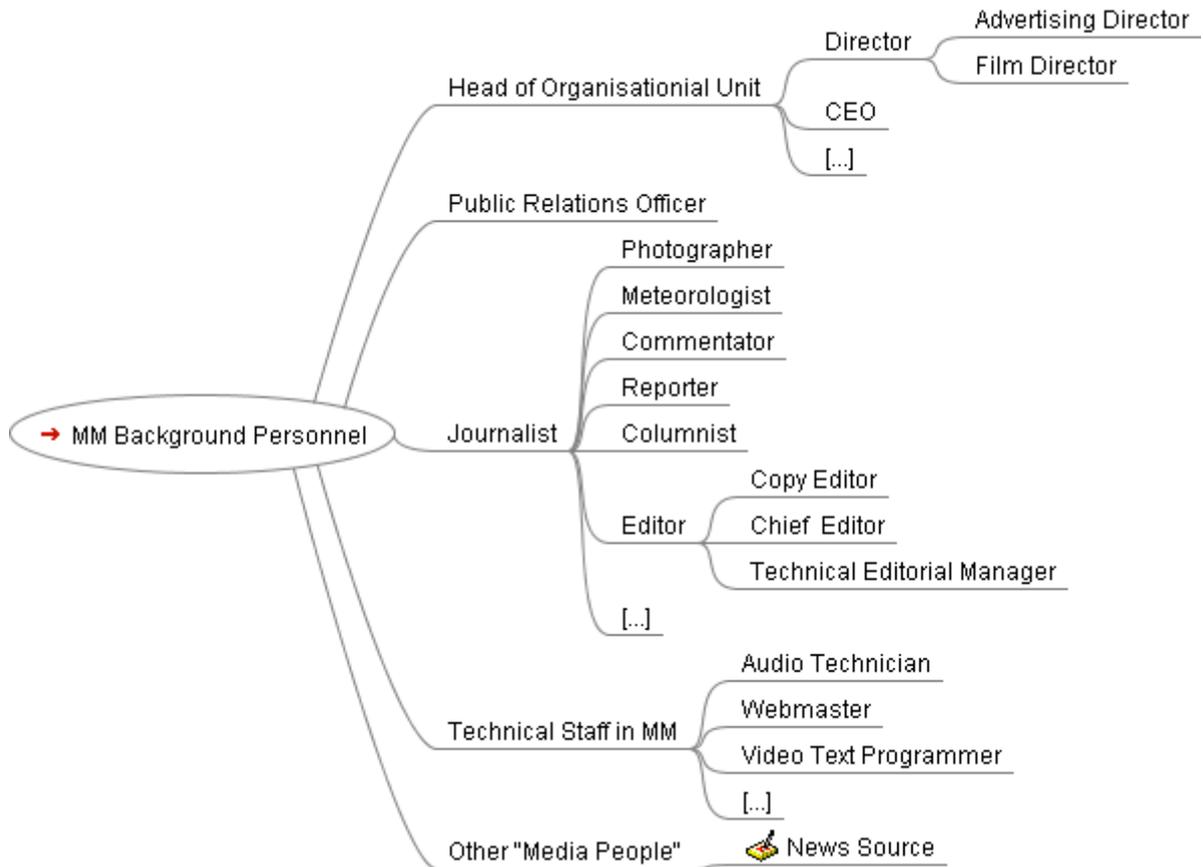
Figure: Mass Media Background Personnel

‘Background personnel’ are the ‘doers’ behind the scene, e.g., journalists in charge for the news room, ‘techies’ etc.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010
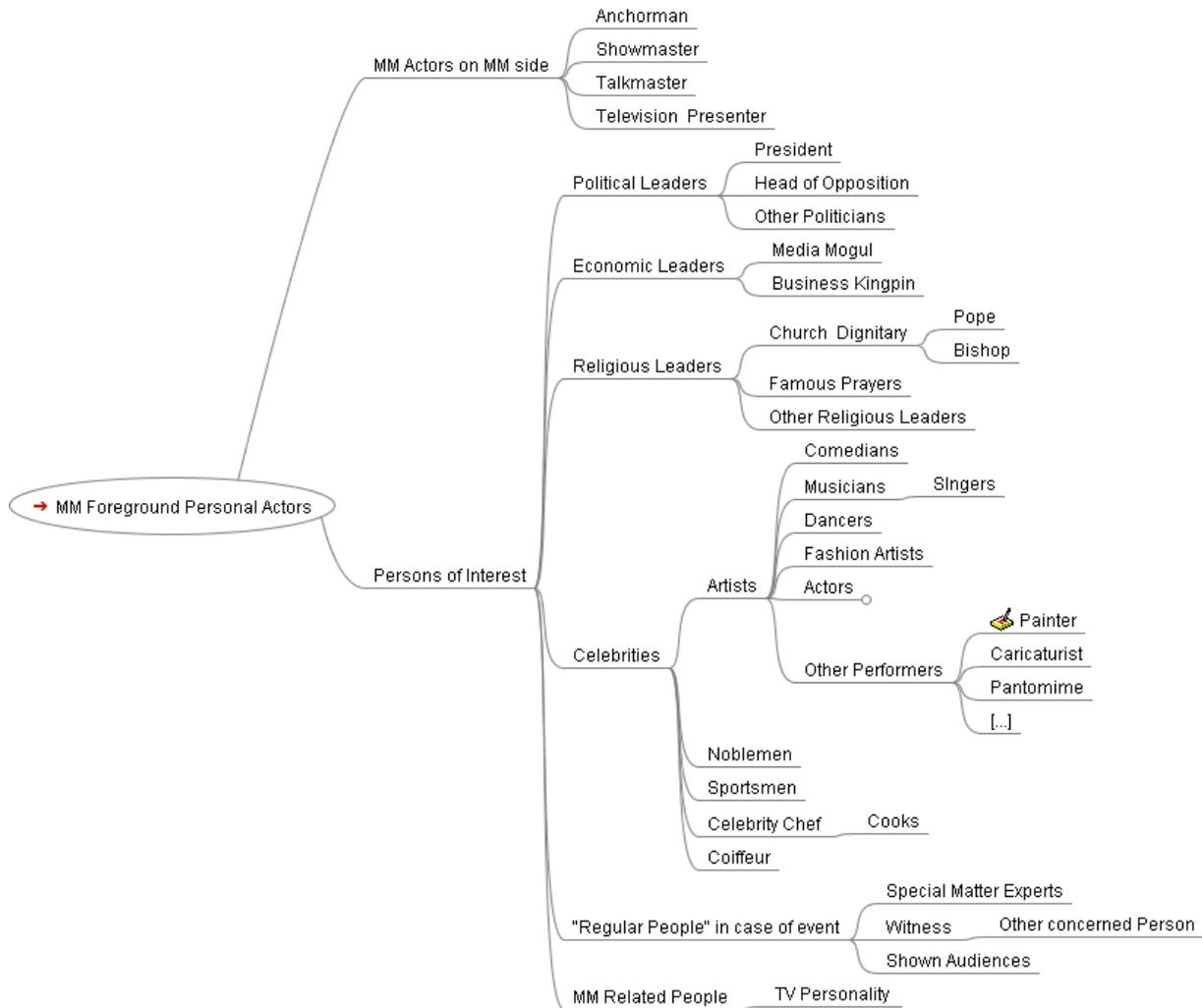
Figure: Mass Media Foreground Personnel

Complementary to background personnel, 'foreground personnel' serve as public personalities, well known via media presence to the mass media audiences, e.g. politicians, celebrities, religious leaders, and people who cultivate their mass media presence as so called TV personalities in an artificial way. In case of an event, 'regular people' serve as TV personalities in the role of shown audiences (e.g., in TV shows), or as witnesses, e.g., of crime scenes or calamities.

Figure: Mass Media Audience

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

In the context of this concept an 'audience' is understood as a well-defined group of people that receives the information circulating in the information environment under similar circumstances.
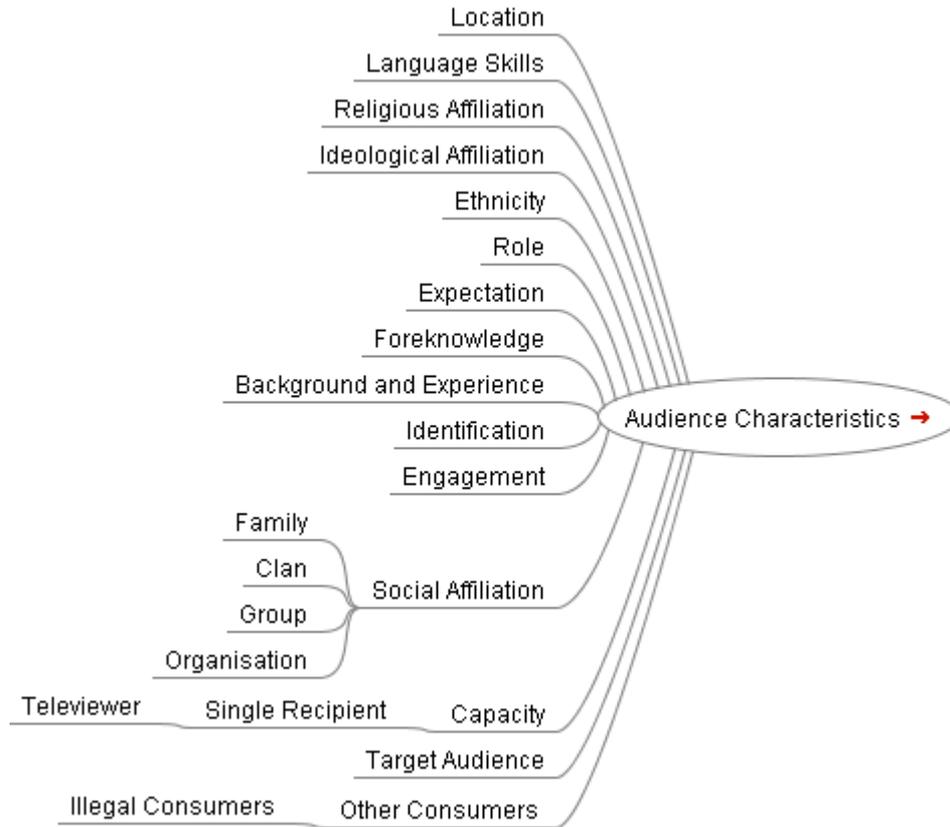
Figure: Mass Media Audience Characteristic

Typical attributes that characterise the members of an audience are location, race, gender, ethnicity, status and role. Important factors that determine the characteristics of an audience with respect to the reception of messages include the audience's expectations, foreknowledge, background and experience, engagement and identification.
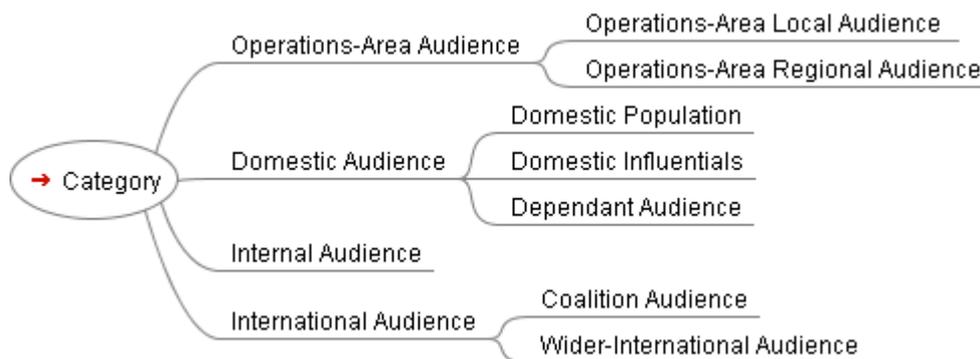
Figure: Mass Media Audience Categories

Audience analysis must take into account different categories of audiences.

Regional audiences are formed by the regional populations in the crisis area. Opinions and attitudes of these audiences may most directly influence the course of events in the operational environment. Regional audiences consist of

- population, leadership and armed forces of hostile actor,
- population living in the operations area but not directly to be included with a conflict party,
- population and governments of countries adjacent to the operations area.

Domestic audiences are made up by the populations of the member nations of the coalition. Their main sources of information are domestic media. They are important to the information environment as public opinion may influence political decision-making. Special heed has to be paid to domestic opinion leaders, namely persons with disproportionate influence on public opinion due to high popularity, a reputation as expert and/or strong media presence such as politicians and statesmen, members of 'think-tanks' and professional bodies, special political advisers, newspaper columnists, academics, analysts, journalists, and celebrities.

A sub-set of the domestic audiences are persons with close ties to the coalition's soldiers who have access to public information channels but may receive additional information through personal communication. Persons in this group include families, partners, civil servants, colleagues, and friends.

A goal of shaping the information environment with respect to the domestic audiences is to ensure that the populations of the countries in the alliance unanimously support the goals of the alliance and thus foster its cohesion. In doing so it has to be borne in mind that the domestic audiences of different countries may perceive and react differently on the same news / information.

The Wider International Audience consists of people living neither in or near the operations area nor in one of the coalition countries. It may be assumed that due to the wide availability of modern media the wider audiences have essentially the same access to sources of news and information as the domestic audiences.

Any strategy on the information environment must keep in mind that it is not possible to address an audience separately and that it is therefore necessary to ponder the implications of any activity in the information environment on all audiences of interest simultaneously.
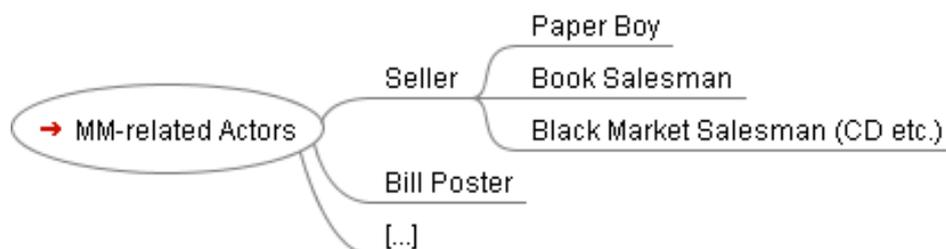

Figure: Mass Media related Actors

Other mass media related actors include those responsible for the diffusion and the selling of media (e.g., paper boys).
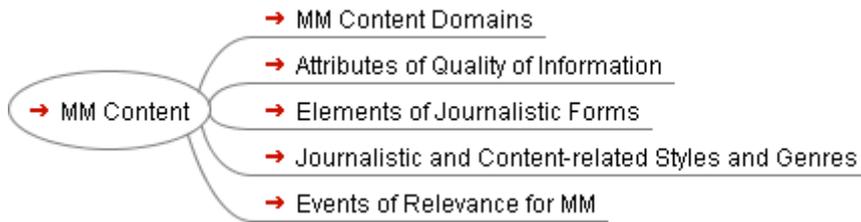
UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Mass Media Content

Figure: Mass Media Content

'Mass media content' is subdivided into content domains (e.g., entertainment, politics), attributes of quality of information (e.g., relevance, accuracy, timeliness, and credibility), elements of journalistic forms (e.g., headline), journalistic and content-related styles and genres (e.g., investigative journalism), and events of relevance for mass media (e.g., communicative events like demonstrations).
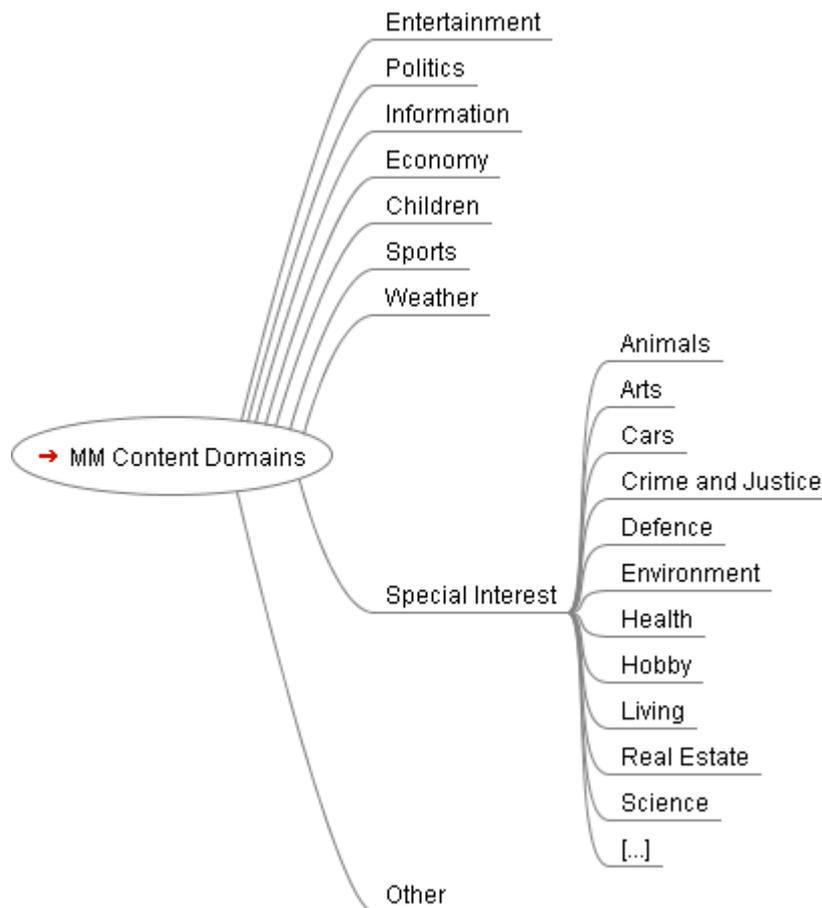
Figure: Mass Media Content Domains

'Mass media content domains' relate to the main and special areas of interest of audiences.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Figure: Attributes of Quality of Information

Following Western standards mass media are often assessed by the quality of their media coverage. In this regard typical quality criteria are assembled as 'attributes of quality of information' above.
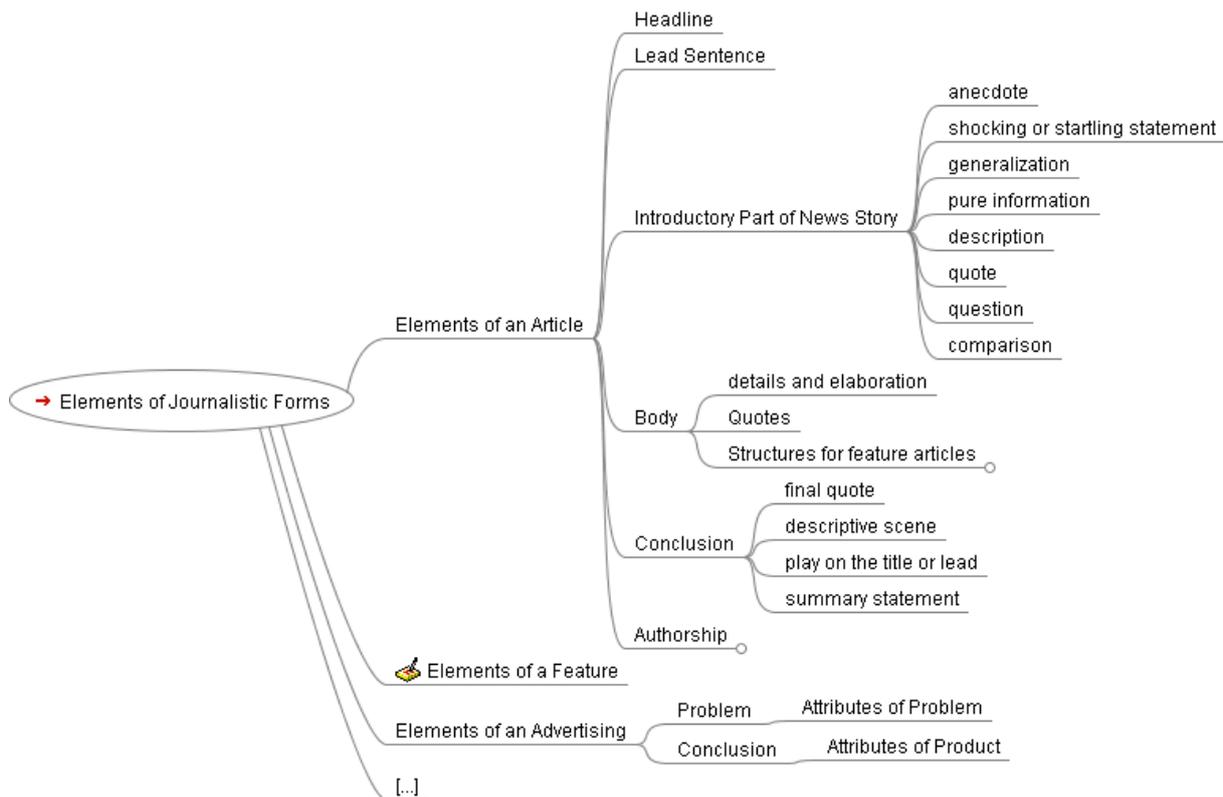
Figure: Elements of Journalistic Forms

'Elements of journalistic forms' are structural descriptions of typical journalistic forms and their inherent constructions.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Figure: Journalistic and Content-Related Styles and Genres

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010
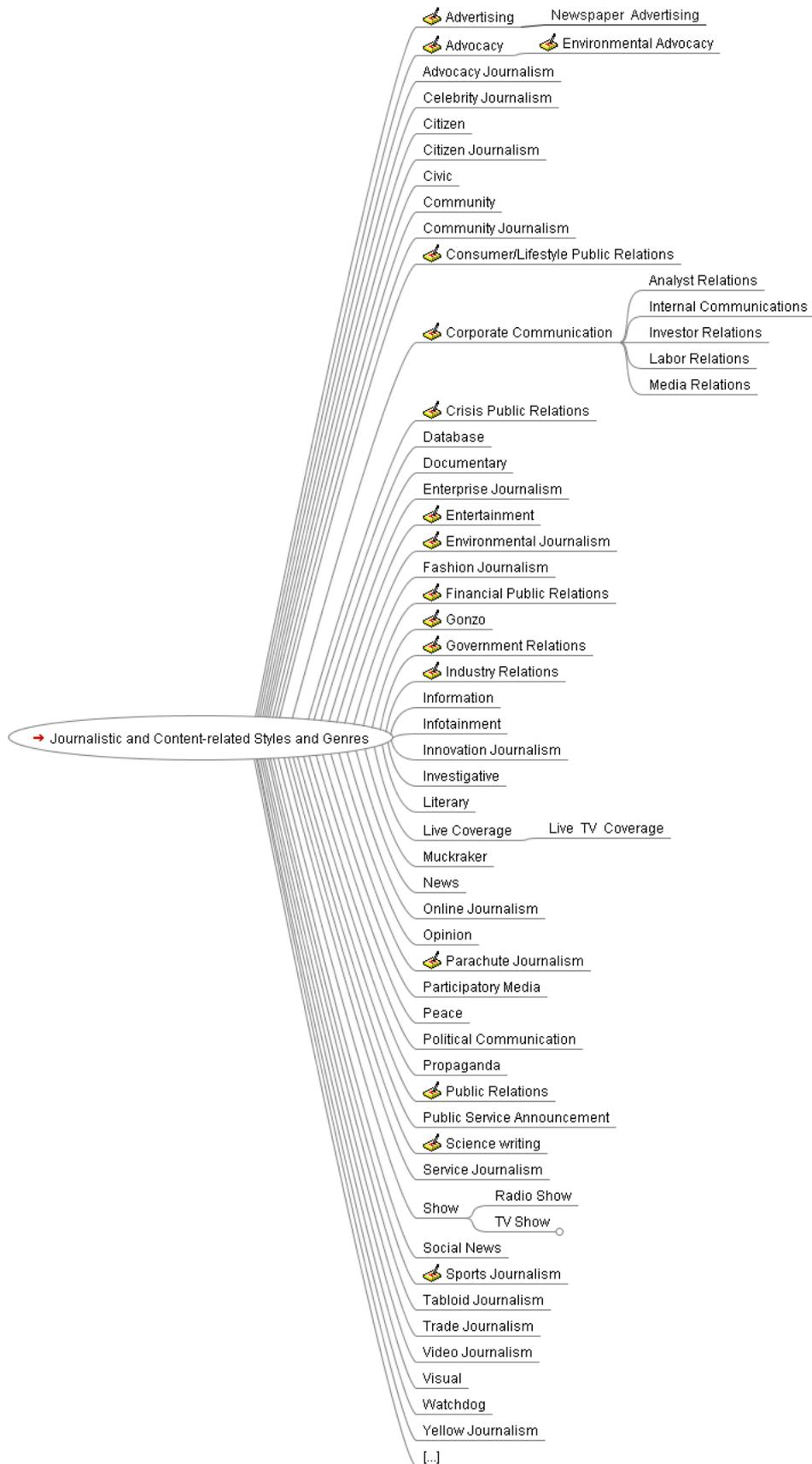
'Journalistic styles and genres' appear to be rather diverse in a range from yellow journalism to scientific journalism.
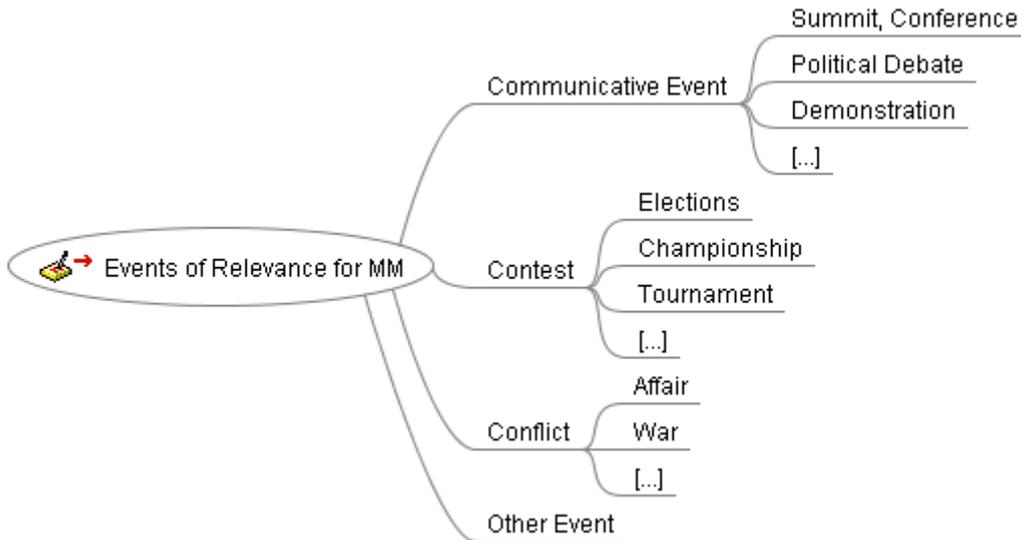
Figure: Events of Relevance for Mass Media

Relevant 'mass media events' are typically described as motivated by communication, contest, and conflict.

Mass Media Types

Figure: Mass Media Types

'Mass media types' are subdivided into technical and content-related types (e.g., news media).

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010
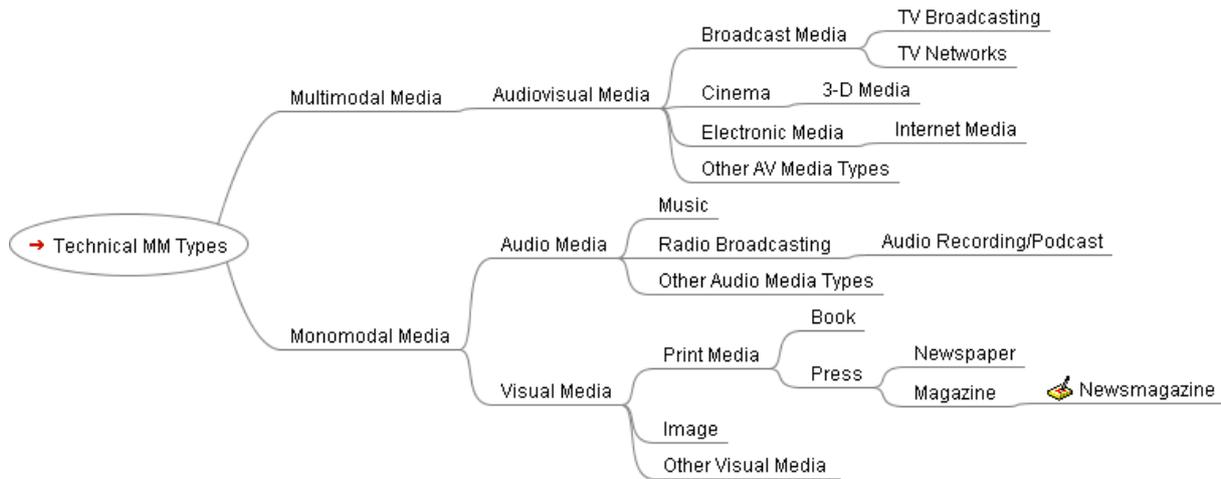
Figure: Technical Mass Media Types

'Technical types' are subdivided along the modality of media referring to the regarding sensory channel for which certain media are designed (e.g., audiovisual media like 3-D movies). Following [MNE 6 GRE 2010], internet media lead to a fundamental change in media usage: "Above everything else, the ability to actively use the Internet via the many possibilities offered by Web 2.0 – blogs, social networking, wikis, video-sharing sites, Twitter etc. – to express opinions, establish relationships, and pursue individual and collective projects is undoubtedly changing the fundamental experience of media use."
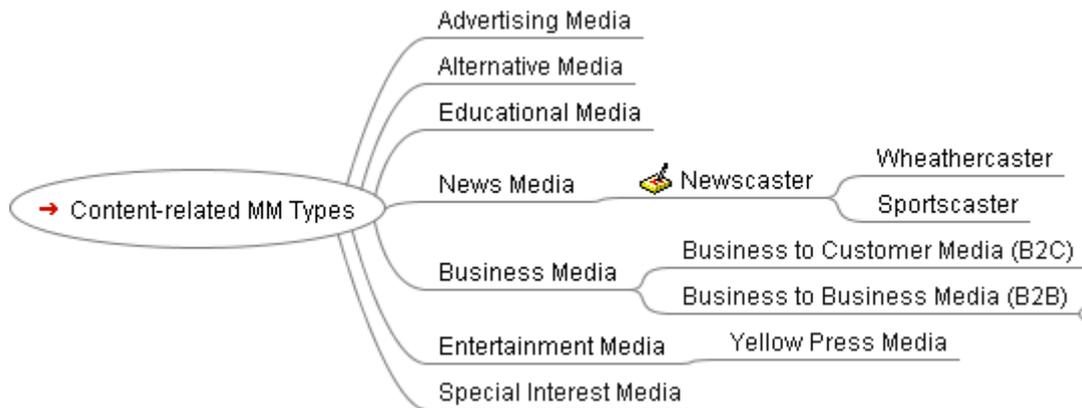
Figure: Content-related Mass Media Types

'Content-related mass media types' cover high level media categories (e.g., business media or entertainment media).

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Mass Media Functions
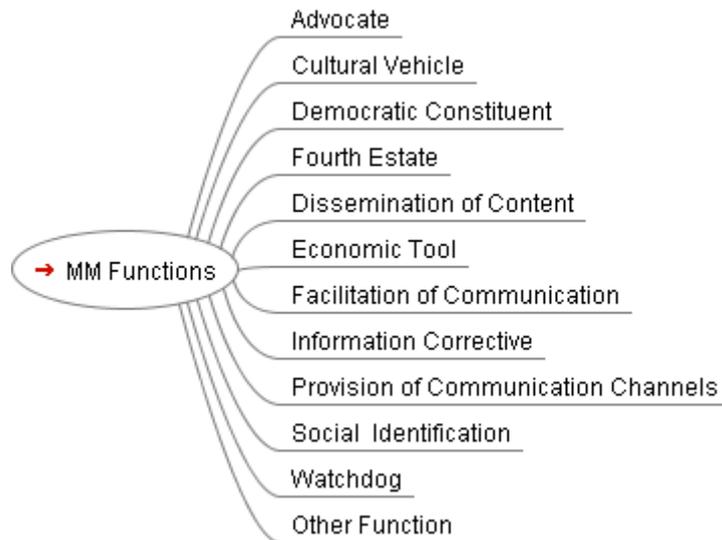
Figure: Mass Media Functions

Mass media can carry out many functions such as democratic constituent, cultural vehicle, and social identification.
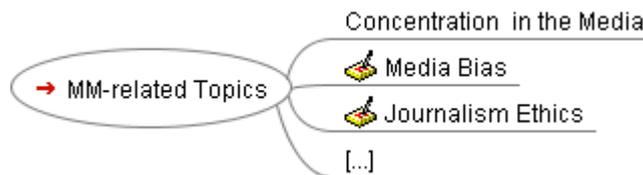
Mass Media Topics

Figure: Mass Media -related Topics

'Mass media topics' are typical issues in discussions about the role and power of media, for example 'media bias'[92], which refers to the bias of journalists and news producers (e.g., regarding the selection of which events and stories are reported and how they are covered).

---

[92] Media bias constitutes the violation of a set of standards in media coverage that characterize objectivity. Objectivity comprises the adherence to factuality that is truth and relevance and to impartiality. Media bias is present if there is a regular trend in media content that is volitional, teleological, threatening to conventional values and sustained. … *Volitional* implies that the media content is deliberately skewed as opposed to accidentally. *Teleological* points to the fact that media bias is done for a reason and is not pointless. The underlying perception is that media are biased to whatever extent to advance one or more of the media outlet's goals. *Threatening to conventional values* excludes radical and reactionary viewpoints that are too extreme to lead to much consequential persuasion. *Sustained* prohibits a diagnosis of media bias based on a single story. Media bias is consistent and persistent across time. Based on [D'Alessio/Allen 2007]

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Descriptive Model of the Media Landscape

For practical application it is suggested to translate this comprehensive structural view – the detailed analysis model of the media landscape – into a descriptive status model as a pragmatic tool to be used by advisors and consultants on information environment aspects. This requires a selection of the most relevant system elements and the related understanding of their roles and dynamics in the system according to actual knowledge needs.

Descriptive and Process Models

This section outlines two distinct models:

  – a descriptive (in part question-based) model for 'issues of concern/interest to actors' (named 'issues occurring in the information environment');
  – a process model on the interrelationship of actors and the media.

Issues Occurring in the Information Environment

Generally, an issue is understood as a point or matter of discussion, debate or dispute. In the information environment context the focus is on issues of concern that are of particular relevance to and play an essential role in the thinking of one or more relevance actors. Such issues may bear a close relation to the drivers of conflict or be factors that potentially fuel or defuse the conflict. At least such issues are assumed to potentially influence the behaviour of actors.

The two principal aspects of an issue that are to be discussed in order to support an analysis of the information environment are the factors that make the issue an issue and the way the issue is covered by the media.

One aspect includes the identification of the very origin of the issue and the determination which characteristics cause its impact to the various audiences with the concept *involvement of audiences* being relevant here. The other aspect comprises a description of the coverage the issue receives by the media and the reason of its newsworthiness.


Figure: Central Aspects of Issue

Origin of Issues

Issues may emerge from actions (e.g., military operations), statements (e.g., political debates) and events (e.g., natural disasters). In an analysis of the information environment a partial task with respect to any relevant issue will be to trace back how

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

precisely it has emerged. Conversely, any action on one's own part needs to be analysed with respect to whether and in which way it may become an issue.

Involvement

In the context of the information environment the focus will be on the coverage of issues by media and on how this coverage has persuasive effects affecting opinions and attitudes of the audiences that receive and process the messages contained in it. The central concept in the explanation of persuasion by messages is that of *involvement*. Several attitude-formation theories concurrently posit that involvement strongly determines the manner and the intensity with which messages are processed and is an important factor of a message's power to have impact on a person's attitudes.
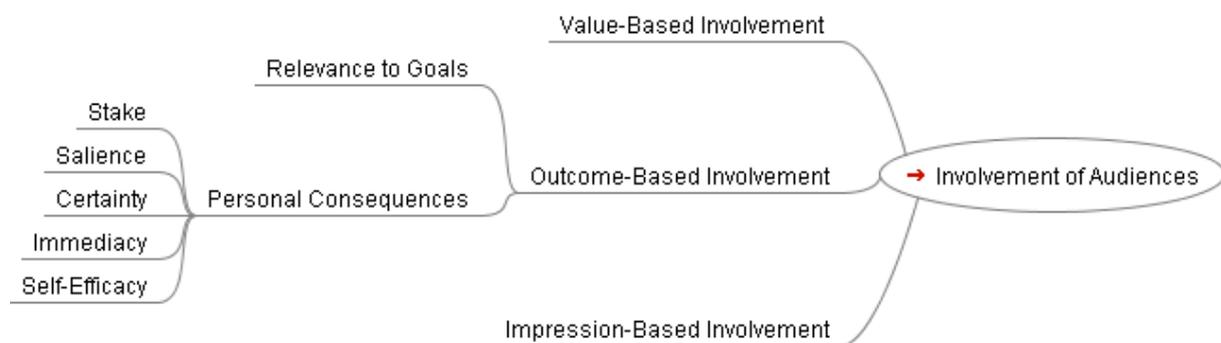

Figure: Involvement of Audiences

Persuasion theory distinguishes three kinds of involvement that determine the questions to be asked in order to determine the relevance of topics and their coverage in the information environment. The following questions have to be answered with respect to all relevant audiences:

- Which explicit references to personal consequences to the members of the audience such as threats or promises does the issue contain?

- Which personal consequences to the audience's members does the issue imply according to the audience's customary thought pattern? The following dimensions lend themselves to an assessment of the relevance of personal consequences to individuals [Crano 1995]:
    - *stake* containing the perceived personal consequence itself,
    - *salience* referring to the individual's awareness of the consequences,
    - *certainty* describing the likelihood of the consequences,
    - *immediacy* referring to the perceived amount of time until the consequences will occur,
    - *self-efficacy* understood as the individual's perceived capability to personally cope with the demands implied in the consequences.

- In which ways is the issue relevant to the goals of the audience's members?

- In which ways does the issue touch personal values of the audience's members?

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

– Do the audience's members have the impression that their response to the issue will strongly affect others' perception of themselves?

Media Coverage of Issues
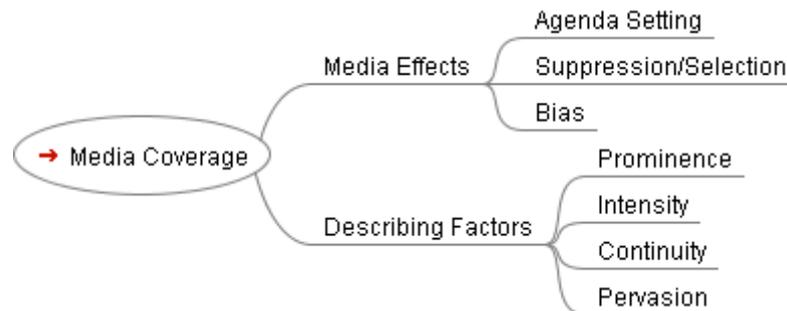
Figure: Overview on Media Coverage

Issues are covered by various media. Factors that describe the coverage of an issue in the media address

– the *prominence* of the issue (e.g. whether the issue makes it to the headlines),

– the *intensity* of the coverage of the issue referring to the depth to which various facets of the issue are dealt with,

– the *continuity* referring to the duration and permanence of the coverage

– the *pervasion* of the issue across the media landscape.

An analysis of media coverage includes the following questions.

– Which media do cover the issue in which way?

– In which ways, why and on which actor's behalf do media

   o push,

   o suppress, or

   o bias

– the coverage of an issue?

– How and why do the prominence and the intensity of the occurrence of an issue in the media change over time?

Newsworthiness

Galtung and Ruge [Galtung/Ruge 1965] identified twelve factors that determine the value of an issue as part of news or, as they labelled it, its *newsworthiness*. In the terminology of Galtung and Ruge the factors are labelled and interpreted as follows.

– The *factor frequency* (of occurrence) means that events that fit well with the news organization's publishing schedule are more likely to be reported than those that occur at inconvenient times of day or night.

– *Threshold factor* (of remarkableness): News must have a certain degree of remarkableness.

– *Unambiguity*. News whose implications are clear make better copy than those that are open to more than one interpretation, or where any understanding of the implications depends on first understanding the complex background in which the news take place.

– *Meaningfulness* relates to the relevance of a topic to an audience and to the degree of identification the audience has with a topic and boosts the coverage.

– *Consonance*: Stories that fit with the media's expectations receive more coverage than those that defy them. Thus, consonance essentially refers to the media's readiness to report an item.

– *Unexpectedness*. If an event is out of the ordinary it will receive more attention than something that is an everyday occurrence.

– *Continuity*: A story that is already in the news has good chances to get attention in the sequel.

– *Composition*: Stories must compete with one another for space in the media. Editors tend to maintain a sort of balance between different types of coverage, which may influence the prominence of issues.

– *Reference* to elite nations: Stories concerned with global powers receive more attention than those concerned with less influential nations.

– *Reference* to elite persons: Stories concerned with the rich, powerful, famous and infamous get more coverage.

– *Personalization*. News content that relates to individuals is more attractive than one in which there is no such human interest.

– *Negativity*. Bad news is more newsworthy than good news.

Interrelationship of Actors and the Media

This section presents a high-level generic conceptual model that comprises the fundamental concepts *actor* and *media* and additional concepts required to establish links between these two. The model identifies many of the generic aspects that must be considered in any analysis of the information environment. Elements central to the information environment include *actor, activity, medium, audience, information* and *issues (of concern to actors)*.

Starting at the concept actor the model can be developed as follows. An actor may assume one or more roles each of which entails certain long-term or strategic goals determined by the actor's aspirations. An example of an actor with more than one role is a politician who is also an industrial magnate. Strategic goals in turn are broken down into short- and medium-term objectives. The degree to which an objective has been attained is continuously monitored and evaluated. This evaluation may give rise to new activities on the part of the actor that will cause certain effects and as a consequence alter the state of the selfsame actor as well as the states of other actors. Thus all actors and their activities may be regarded as a system of mutually interacting control circuits.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Figure: Interrelationships between Actors and Media

Essential aspects of the information environment are the generation and dissemination of information and the relevance of this to communication and decision making. Media are the channels through which information is distributed among their audiences. The entirety of the information flowing through a medium makes up its media content that consists of media content fragments containing pieces of information. An article in a newspaper is an example of a media content fragment. Each media content fragment deals with certain topics and has influence on the audience. Audiences develop a perception of media with respect to their relevance and credibility. This perception significantly determines the degree to which media can influence opinions and attitudes of their audiences.

Actors are affected by the information environment due to the fact that they are parts of audiences. On the other hand actors both deliberately and involuntarily act upon the information environment. The former happens by exerting direct or indirect influence on media. The latter occurs because each activity conducted by an actor gives rise to events that in turn are covered by media and become topics in media contents fragments.

Influence Models

See Annex C3.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Annex C2   Specific Communication Models

This Annex provides an overview of some communication approaches/models which are considered candidates for complementing the 'elementary communication model' as outlined in Chapter 6 of this concept by more specific views on parts of the communication process, namely:

– Agenda Setting Theory

– Heuristic-Systematic Model (HSM)

– Elaboration Likelihood Model (ELM)

– Extended Elaboration Likelihood Model (Extended ELM)

Agenda Setting Theory

"What is not in the media is not in the public agenda."

Executive Summary

The agenda-setting theory describes to what extent mass-news media have influences on audiences by their choice of what media content to consider newsworthy and how much prominence and space to give them. Thus Agenda-setting theory's main postulate is the so called salience transfer. Besides reality perception of the audience, salience transfer means the ability of the mass media to transfer issues of importance from their mass media agendas to public agendas. Others put it this way:

– "Agenda setting means to put an issue on the media agenda and make it the subject of public discussion." [Bryant/Oliver 2009]

– "The theory explains the correlation between the rate at which media cover a story and the extent to which people think that this story is important. This correlation has been shown to occur repeatedly." [Media Tenor AS]

– "Here may lie the most important effect of mass communication, its ability to mentally order and organize our world for us. In short, the mass media may not be successful in telling us what to think, but they are stunningly successful in telling us what to think about." [Shaw/McCombs 1977] cited by [Media Tenor AS]

Theoretical Background

The necessary step of news selection in the media world and the observed effects are being documented by [Media Tenor AS]: "Agenda-setting is believed to occur because the press must be selective in reporting the news. News outlets act as gatekeepers of information and make choices about what to report and what not to report. What the public knows and cares about at any given time is mostly a by-product of media-gatekeeping.

The agenda-setting function is a 3 part-process:

   1. Media Agenda - issues discussed in the media

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

2. Public Agenda - issues discussed and personally relevant to the public
3. Policy Agenda - issues that policy makers consider important

One of the debates between researchers is the question of causality: does the media agenda cause the public agenda, or vice-versa? Ivengar and Kinder established causality with an experimental study where they identified that priming, vividness of presentation and position were all determinants of the importance given to a news story. However, the discussion of whether there is influence by the public agenda upon the media agenda is open to question."

The following picture shows how the public agenda is influenced by media reality [Brettschneider MT 2009]:
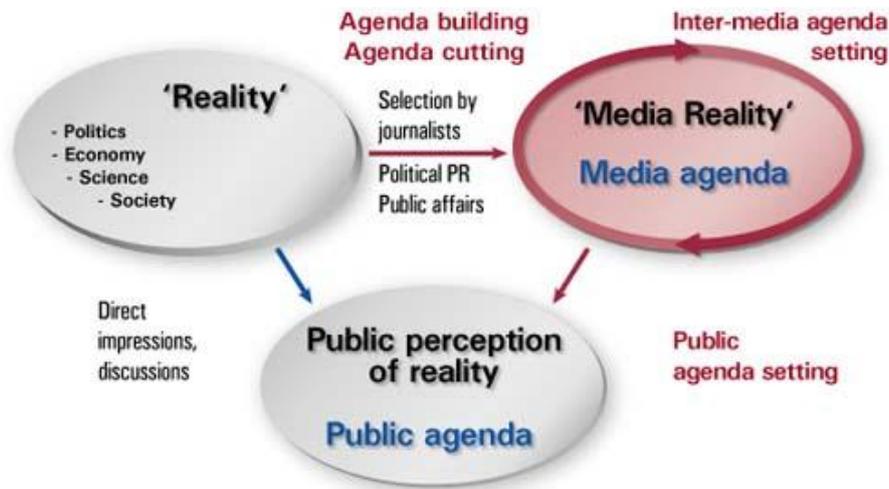

Figure: Public Agenda and the Media

The following picture shows how media reality can be managed by agenda cutting [Media Tenor 2009]:
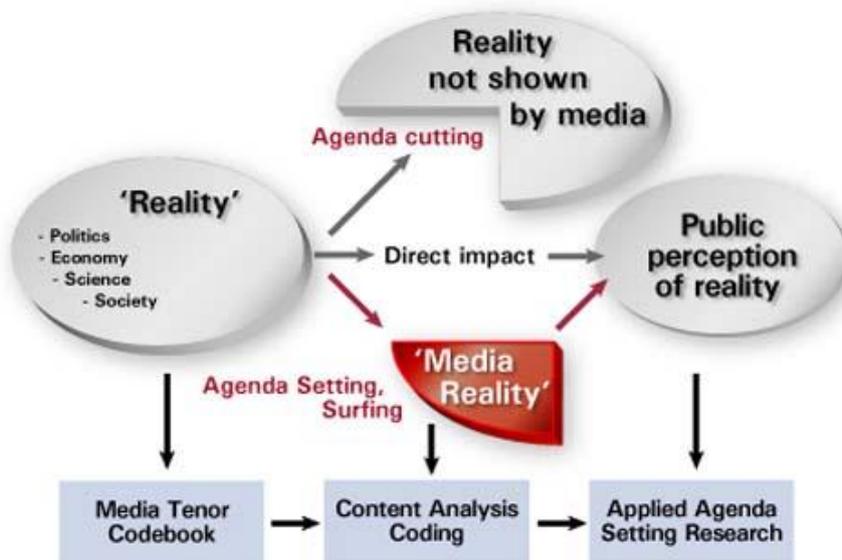

Figure: Agenda and Media Reality

Weaver [Weaver 2008] offers a historic view: "One of the most oft-cited approaches to studying media effects that emerged in the early 1970s is known as the agenda-setting effect (or function) of mass media. First tested empirically in the 1968 US presidential election by University of North Carolina journalism professors Maxwell McCombs and Donald Shaw (McCombs & Shaw 1972), this approach originally focused on the ability of the mass media to tell the public what to think about rather than what to think. This was a sharp break from previous media effects studies that had focused on what people thought (their opinions and attitudes) and on behaviors such as voting and purchasing various goods and services (Media Effects, History of). In their original 1968 study, published in Public Opinion Quarterly in the summer of 1972, McCombs and Shaw quoted Bernard Cohen, author of The Press and Foreign Policy, who wrote that the press "may not be successful much of the time in telling people what to think, but it is stunningly successful in telling its readers what to think about" (Cohen 1963, 13). They also quoted from Kurt and Gladys Lang's chapter on the mass media and voting in Bernard Berelson's Reader in Public Opinion and Communication: "The mass media force attention to certain issues. They build up public images of political figures. They are constantly presenting objects suggesting what individuals in the mass should think […]"

The pseudo-environment in terms of mental states of recipients is highlighted by [Media Tenor AS]: "Walter Lippmann, a prominent American journalist and scholar from Harvard University was the first to analyze the impact of the media on people's perceptions. In 1922, Lippmann described in 'Public Opinion' that people did not respond directly to events in the real world but instead lived in a pseudo-environment composed of "the pictures in our heads". The media would play an important part in the furnishing of these pictures and shaping of this pseudo-environment." [Media Tenor AS]

Empirical Notes

It is worthwhile to consider the circumstances and constraints of agenda setting research which leads to the question of portability of findings to non-western environments: "Agenda-setting effect is dependent on certain conditions and intervening variables and therefore it is quite sensitive for interferences. In many cases it was only possible to survey certain media or topics and specific groups of recipients in limited regions. There are no spatiotemporal indifferences. Various studies were done during election-terms which is an advantage because the audience is quite attentive to political topics. But there are disadvantages such as certain strategies run by PR-manager of political parties. Most of the studies were held in context of over-mediated American presidential election regions. Therefore, a transfer to different media systems of different cultures is merely possible in parts." [Bryant/Oliver 2009]

Research and Survey Methods (based on [Bryant/Oliver 2009]):

- *combination of content-analysis and surveys:* Using aggregated media agenda without certain differentiation and comparing those with individual agenda of recipients.
- *cross-sectional and panel studies:* It is not possible to disperse the stimulus-response-problem by cross-sectional studies because there is only one measu-

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

rement term (e.g. cross-sectional: Chapel-Hill-Study by McCombs/Shaw in 1968). Whereas panel-studies are adequate methods to describe modifications in public topics and to survey diverse influences on individual-related modifications because of its repeated measurements (see Tipton/Haney/Baseheart in 1975).

– *experiments and quasi-experiments:* Not yet widely used. Experiments allow for controlling received contents and effects of third variables (Ivengar). Quasi-experiments reduce the disadvantages of experiments but it is harder to control marginal conditions. It is only appropriate to survey single topics but not a media agenda.

– *survey:* Content analysis of the media covers media agenda. Identifying the importance attached to a topic covers public agenda.

Related Theories, Approaches and Models

– Priming: Thematic awareness rising of recipients.

– Framing: Provision of possible causal interpretations, definitions and moral evaluations.

– Diffusion of Innovation: Handling certain media messages as new interpretations of reality and thus as innovations (see also interpretation in MNE 6 Objective 1.3).

– Agenda Cutting: "Politicians or executives have an interest into being positively associated with certain issues. Conversely, agenda cutting means to divert audiences' attention from certain issues by pushing them off the media agenda." [Media Tenor 2005]

– Agenda Surfing: "[…] describes a tactical effort to profit from the popularity of current or emerging issues. Not-for-profits or companies are most likely to make use of that tactic to gain public attention. Their political agenda may be more in sync with the platform of any individual party, but overall they are more interested in steering the public discussion into a direction favorable to their ends." [Media Tenor 2005]

– Media-Gatekeeping: Gatekeeper's (e.g. journalist) decision on what is worthy to be included in the daily media program or other media content. What is the rationale and motivation underlying this decision process? However, not the single journalist himself influences the information flow but also the news agencies. Therefore the journalist is the last gatekeeper after a long row of gatekeepers.

– Cultivation Theory: Agenda setting fits to perception patterns of people who form their conception of the world (reality building) largely with the help of extensive media consumption: „Study of how exposure to the world of television contributes to viewers' conceptions about real world. [...] television as a system of messages, made up of aggregate and repetitive patterns of images and representations to which entire commnities are exposed - and which absorb - over a long period of time." [Morgan et al. 2009] On the other hand, there a findings regarding low media users [Wanta/Ghanem 2007]: "Although exposure to media messages is indeed a key factor in the agenda setting process, the

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

messages that the media transmit apparently are even more important. Thus, two explanations are plausible here: Either low media users receive media messages through interpersonal communication channels or low media users are affected by their limited exposure to mass media channels. In either case, media influences appear to have powerful effects at societal level. This could be the case particularly with "high threshold" issues".

– Selective Exposure Theory: Recipients prefer exposure to arguments supporting their position rather than those supporting other positions. Since excessive amount of media choices are available in industrialised countries, media consumers have many choices to expose themselves to selected medium and media contents. The question then arises on regarding sets of media agendas and their relation to individual agendas.

Examples

Example 1: People don't recognize the need for help [Media Tenor AS]

"There was a perceptible difference between the coverage on the tsunami that hit South-East Asia in December 2004 and the earthquake that hit Pakistan in October 2005. The tsunami received far more extensive coverage in all countries analyzed in both television and print media which in turn affected people's behaviour in terms of private donations. Public were not aware of the need for help in the earthquake effected region of Pakistan. In Germany, for example, the tsunami received 666 reports in the three TV channels in comparison to 66 on the earthquake. These 666 reports contributed to private donations amounting to $USD178 million while only $USD8 million has been collected for the earthquake so far." One could argue that public attention on crisis news has been slightly exhausted after the tsunami catastrophy.
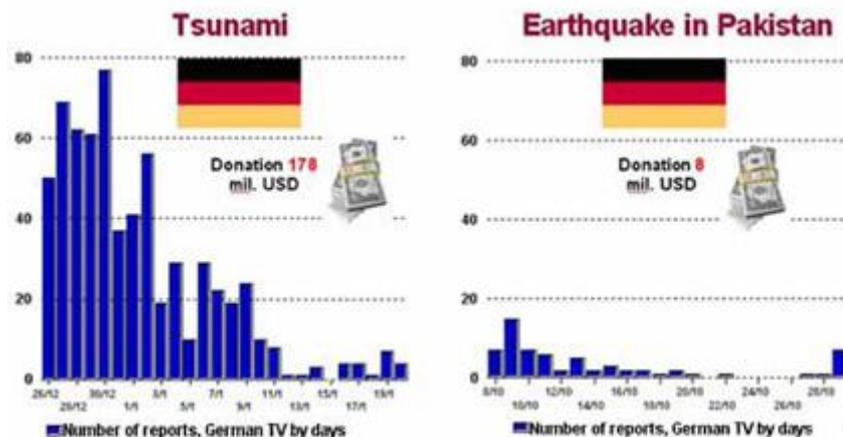

Figure: Coverage of the Tsunami vs. the Earthquake - German TV news

Example 2: Rightwing Extremism in Germany [Media Tenor AS]

"35 % of the people questioned by the Forschungsgruppe Wahlen stated in August 2000 that right wing extremism was the most important issue in Germany. This result followed a multitude of reports especially concerning a commuter train attack in Düsseldorf at the beginning of August, where right wing extremist motives were initially suspected."

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010
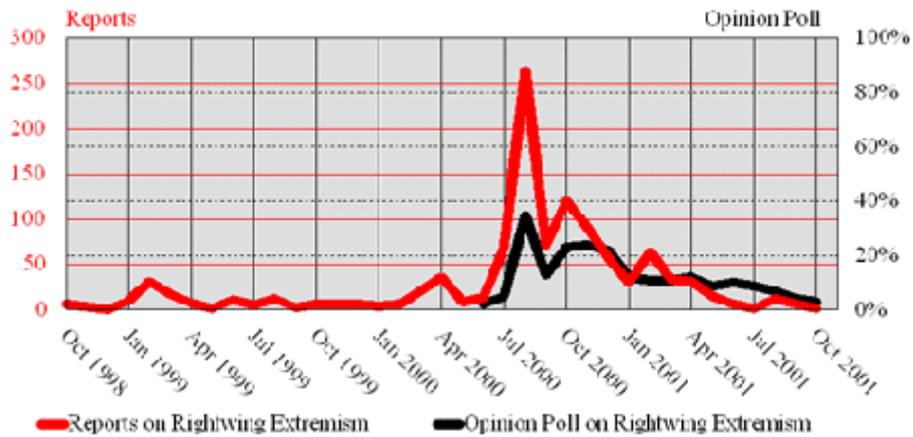
Figure: News versus Opinion Polls ("FG Wahlen") 10/98-11/01

Example 3: Mad Cow Disease, Media and Real World Media Effects [Media Tenor AS]

"TV coverage of BSE did not only affect public awareness, but also consumer behavior: Beef consumption went down 71% in the wake of the intensive TV reporting. Even after the amount of negative reports diminished, the effects of the coverage about BSE lasted. After 9 months, beef sales finally began to recover."
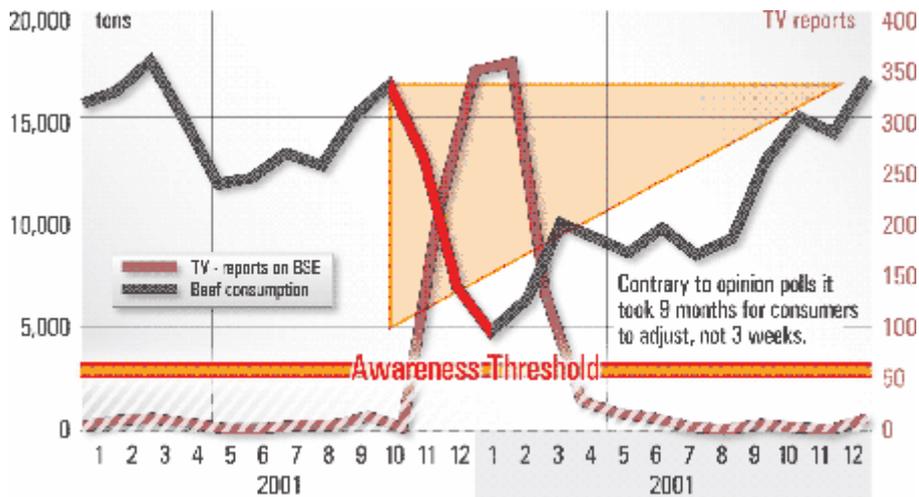

Figure: Falling Beef Consumption

References

[Brettschneider MT 2009] Brettschneider, Frank: Grafik "Agenda Setting". University Höhenheim, Germany. No date. – Cited on Media Tenor International: Agenda Setting Theorie. Zürich, 2009. Internet: http://www.mediatenor.de/smi_AS_approach.php, seen 19 September 2009.

[Bryant/Oliver 2009] Bryant, Jennings; Oliver, Mary Beth: Media Effects - Advances in Theory and Research.- Routledge: New York, 2009.

[Media Tenor AS] Media Tenor International: Agenda Setting Theory. Zürich, no date. Internet: http://www.agendasetting.com/res_theory.php, seen 19 September 2009.

[Media Tenor 2005] Media Tenor: Strategy and Tactics of Agenda Surfing. How to profit from the popularity of current or emerging issues. 6th International Agenda Setting Conference, Lugano, 02.12.2005. Source: Media Tenor 04/28, 06/07/2005.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

[Media Tenor 2009] Media Tenor International: Agenda Setting Theorie. Zürich, 2009. Internet: http://www.mediatenor.de/smi_AS_approach.php, seen 19 September 2009.

[Morgan et al. 2009] Morgan, Michael; Shanahan, James; Signorelli, Nancy: Growing up with Television - Cultivation Processes. In: Bryant, Jennings; Oliver, Mary Beth: Media Effects - Advances in Theory and Research. Routledge: New York, 2009, pp. 34 - 49.

[Mozammel/Zatlokal 2002] Mozammel, Masud; Zatlokal, Barbara: Strategic Communication in PRSP. - Draft for comments October 02. - 2002. - Internet: http://siteresources.worldbank.org/INTPRS1/Resources/383606-1205334112622/12981_comm0916.pdf, seen 04 February 2010.

[Weaver 2008] Weaver, David: Agenda Setting. In: Donsbach, Wolfgang (ed): International Encyclopedia of Communication Online. Blackwell Publishing Inc.: March 2008. Internet: http://www.communicationencyclopedia.com/public/tocnode?query=agenda+setting&widen=1&result_number=1&from=search&id=g9781405131995_chunk_g97814051319956_ss36-1&type=std&fuzzy=0&slop=1, seen 19 September 2009.

Heuristic-Systematic Model (HSM)

"Messages are either processed in a systematic, analytical manner or in a cognitively less effortful manner using simple schemata or heuristics."

Executive Summary

The HSM is a dual-process model of attitude change that draws a line between two processing modes labelled systematic processing and heuristic processing. Systematic processing is "a comprehensive, analytic orientation in which perceivers access all informational input for its relevance and importance to their judgmental task, and integrate all useful information in forming their judgments." [Chaiken et. al. 1989, p.212] By contrast, "heuristic processing is viewed as a more limited processing mode requiring much less cognitive effort and capacity than systematic processing. When processing heuristically, people focus on a subset of available information enabling the use of simple inferential rules, schemata, or cognitive heuristics to formulate their judgments and decisions." [ibid., p.213] The HSM posits with respect to the interactions of heuristic and systematic processing: (1) Both processing modes can act simultaneously. (2) If the judgmental implications of heuristic and systematic processing are consistent both have independent and additive effects on persuasion (additivity hypothesis). (3) If the implications of heuristic and systematic processing are at variance, the implications derived from systematic processing can overwrite those based on heuristics provided that the message receiver is sufficiently motivated to analyze the message. [Todorov et al. 2002]

References

[Chaiken et.al. 1989] Chaiken, Shelley; Liberman, Akiva; Eagly, Alice H. (1989): Heuristic and systematic processing within and beyond the persuasion context. In James S. Uleman & John A. Bargh (Eds.), *Unintended thought* (pp. 212-252). New York: Guilford.

[Todorov et.al. 2002] Todorov, Alexander; Chaiken, Shelley; Henderson Marlone D.: The heuristic-systematic model of social information processing. In James P. Dillard & Michael Pfau (Eds.), The Persuasion Handbook: Developments in Theory and Practice (pp. 195-211). SAGE: Thousand Oaks 2002.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Elaboration Likelihood Model (ELM)

"The key parameter in the mechanism through which a change of attitudes occurs is the intensity of elaboration."

Executive Summary

The elaboration likelihood model describes the formation and change of attitudes as a result of the reception and processing of a message. It posits the existence of two distinct processing routes through which change of attitudes occurs: One of them (labelled central route) involves careful evaluation of the arguments as opposed to the second route (labelled peripheral route) that relies on cues or heuristics. Which of these processing routes is used depends on the motivation and the ability of the recipient of the message to elaborate on a message. The motivational state of message is usually represented by the concept of involvement.

The ELM posits that the process that is taken when developing an attitude has implications for the persistence and longevity of the attitude. It proposes that central route processing results in attitudes that are more resistant to counter-persuasion, persistent over time, and predictive of future than are those formed through peripheral processes [Petty/Cacioppo 1986].

Theoretical Background

The ELM is a dual-process model that has been developed on the basis of traditional attitude and information processing theories, in particular the cognitive-response approach to persuasion [Petty et al. 1981] that explains the experimentally found small correlation between learning the meaning of a message and being persuaded by it. The main advancement of the ELM lies in the definition of multiple routes of message processing and in the specification of conditions under which these routes will be taken. The application of the ELM is confined to messages with markedly persuasive content. This restriction has led to the development of the extended ELM.

The ELM has been developed to identify the relevant variables in attitude change. It is a multi-process theory that states a correlation between boundary condition of information reception and the depth and elaboration of information processing.

Use of the model

The ELM offers a framework for the investigation of information processing with a focus on attitude change. It is not suited to make *quantitative* predictions on how a certain message will affect the attitudes of the recipients. The focus of the ELM is rather on the analysis of processes than on the evaluation of their outcomes.

Its main application area was the investigation of advertising, where it has been used to explain and predict certain phenomena encountered there.

Criticism

The ELM has been subjected to various criticisms. It has been pointed out that the strict separation between central and peripheral routes has not been empirically verified. Furthermore, the difficulties of the ELM in making quantitative predictions have been criticized.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Related Theories, Approaches and Models

The ELM has been further developed to the Extended ELM that comprises the classical ELM as one important special case. Although there are subtle differences between ELM and HSM, both models are very similar and do not differ significantly in their capability of explaining phenomena of attitude change. Generally the ELM is thought to be more flexible due to its concept of an elaboration likelihood continuum.

References

[Petty et. al. 1981] Petty, Richard E.; Ostrom**,** Thomas M.; Brock**,** Timothy C: Cognitive Responses in Persuasion. L. Erlbaum Associates: Hillsdale 1981

[Petty/Cacioppo 1986] Petty, Richard E.; Cacioppo, John T.: The Elaboration Likelihood Model of persuasion. In Berkowitz, Leonard (ed.), Advances in experimental social psychology (Vol. 19, pp. 123-205). Academic Press: San Diego 1986.

Extended Elaboration Likelihood Model (Extended ELM)

"The nature of the processing of a message and its resulting impact depends on the recipients' involvement with the message the nature of which in turn depends on the receiver goals."

Executive Summary

The Extended ELM notes that message processing is goal driven and defines various types of processing that correspond to different types of receiver goals. Furthermore the types of receiver goals are typically associated with certain media genres and relevant processing determinants.

In this systematic the following modal processing strategies are distinguished:

Hedonic processing is adopted if the content of the messages serves the purpose of entertainment or the messages have a mainly narrative character. The amount of central processing is determined by the recipient's narrative interest and identification with protagonists.

Didactic strategies are used if the message processing is required in order to be able to carry out a task. Here the central factors that determine involvement are the importance of the task and, if existing, the recipients' interest in the topic.

Information scanning occurs as processing strategy if messages are browsed, that are of no particular relevance or interest. Message browsing constitutes a great deal of real-world message processing and is low associated with low involvement in message processing.

Outcome-based processing occurs if the messages directly affect the life of the recipient. This case is covered by the traditional ELM as a case with high motivation to process the message with the relevance of the outcome as determining factor.

Value-protective processing is applied to messages that attack beliefs or attitudes of the message receiver. The intensity of the involvement is determined by the intensity opposing values are held and advocated in the message.

Value-affirmative processing occurs if a message is suited to reinforce the belief system of the receiver. The involvement depends on the consistency of arguments contained in the message and the belief of the message receiver. The table shown below summarizes the main properties of the different processing strategies.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Receiver Goals	Associated Media Genres	Relevant Processing Determinants	Modal Processing Strategy
Entertainment	Novels, films, television, docudrama, historical fiction	Identification, narrative interest	Hedonic
Information skill acquisition	Documentary, biography, history, texts, instructional media, manuals, specialized publications	Task importance, intrinsic interest	Didactic
Surveillance	Online services, advertising, general-interest periodicals, newspapers, broadcast news	Information-seeking intensity	Information scanning
Self-interest assessment	Online services, advertising, general-interest periodicals, newspapers, broadcast news	Outcome relevance	Outcome based
Value defense	Online services, advertising, general-interest periodicals, newspapers, broadcast news	Value extremity, value centrality	Value protective
Value reinforcement	Online services, advertising, general-interest periodicals, newspapers, broadcast news	Value extremity, value centrality	Value affirmative

Table: Receiver Goals, Media Genres, and Processing Aspects

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Annex C3 Influence Models for Key Factors

Introduction

The 'system' information environment – as understood by this concept – encompasses a considerable range of socio-technical sub-systems, elements and aspects, processes and interrelationships. The analysis and assessment of structures and dynamics of and the situation in the information environment should be based on a suitable set of models covering the parts of the information environment relevant to crisis management and their interplay.

Purpose of Influence Models

In this context, influence models are one type of suitable models. They depict relevant factors and their (qualitative) interrelationships and form the basis for exploring the dynamic behaviour of systems. Characteristics are:

- Influence models complement other models describing the information environment or parts of it (such as basic models, structural models, or process models).

- Influence models are developed on the basis of well-founded literature on certain subject matters.

- Influence models identify core factors and establish qualitative relationships between them.

- Influence models explicate mental models and make them available as *Instrument of Dialogue* to analysts, experts and users of analyses. However, they are not meant to be used without support from analysts and experts.

- Influence models provide a visualisation of fundamental relationships between factors (relations expressed as dependencies and interactions).

- Influence models assist with the identification of feed-back loops and their types and characteristics.

- Influence models provide a starting point for the discussion of system dynamics and behaviour, and of the potential for influencing specific factors as well as of related consequences.

- Influence models may contribute to analyses comparing mechanisms effective in a western environment to mechanisms assumed to work in other cultural environments.

- Influence models may serve as starting point of further investigations on the dynamics in terms of quantifying system dynamics models (such as stock-and-flow diagrams).

Lessons Learned while Developing the Influence Models

During the development of influence models such lessons were identified which are considered important for the further development of this approach. They include:

- Most publications reviewed from relevant field of science and application areas do not appropriately support the development of influence models. Often

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

articles delineate facts in a sequential, linear manner. For example, descriptions of cognitive processes are often described in a linear manner and neglect elementary feed-back loops.

- The interpretation of professional articles is frequently difficult, due to a use of terminology that depends on the context and is inconsistent across different articles. Here, the challenge is the translation into a common language, something that cannot be accomplished without support by experts.

- Professional articles are often survey articles that refer to particular topics/situations/experiments and make generalisations/aggregations (difficult). They often follow the idea to outline a theory first and then to try falsify it through specific use cases.

Model Descriptions

The models outlined in this Annex are all described following the same scheme. The model description is made of the parts:

- a description of theme, context, relevant factors and interrelations, and key findings;

- a 'causal loop' diagram (CLD);

- a list of references.

Causal Loop Diagrams as Representation of Influence Models

Causal Loop diagrams (CLDs) provide a language for articulating our understanding of the dynamic, interconnected nature of our world. They represent well-founded statements on specific issues or subject matters. CLDs are constructed by linking together key variables and indicating the causal relationships between these key variables. By stringing together several loops, a coherent model about a particular problem or issue can be created. CLDs can capture mental models of individuals and experts or teams and explicate these for the exchange of views, discussion, and further examination of the subject at hand.

Causal loops are immensely helpful in eliciting and capturing the mental models of the decision-makers in a qualitative fashion. Views and information from actors who are a part of the system to be modelled are important sources of qualitative as well as quantitative data. From these, the modeller is able to form a causal structure of the system. They are an excellent tool for communicating the important feedbacks one believes are responsible for creating a problem.

CLDs have long been used in standard system dynamics practice for purposes connected with simulation modelling. Nowadays they are mostly used prior to simulation analysis, to depict the basic causal mechanisms hypothesized to underlie the reference mode of a system's behaviour over time. These basic causal mechanisms articulate dynamic hypotheses about the system's behaviour as endogenous consequences of feedback structures. They also forms a connection between structure and decisions that generate system behaviour.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Conventions for Causal Loop Diagrams

A causal loop diagram (CLD) is a diagram that aids in visualizing how interrelated variables affect one another. The diagram consists of a set of nodes representing the variables connected together. The relationships between these variables, represented by arrows, can be labelled as positive or negative.

Positive and Negative Causal Links

A causal link describes how a variable influences, i.e., affects or creates an effect onto another variable. The polarity of the causal link describes the effect that, when the level or value of a causing variable is increased, the value or level of the affected variable will increase, too (+), or will decrease (-).
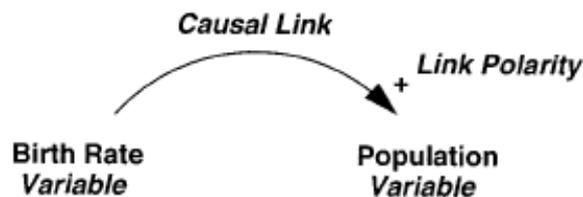

Figure: A causal link from the causing birth rate variable to the affected level variable population with positive polarity

In other words, a positive causal link means that the two nodes change in the same direction, i.e. if the node in which the link starts decreases, the other node also decreases. Similarly, if the node, in which the link starts, increases, the other node increases. A negative causal link means that the linked nodes change in opposite directions, i.e. if the node in which the link starts increases, then the other node decreases, and vice versa.

The definition of polarity is subtle, since even with positive polarity there are scenarios where the cause goes down while the effect goes up (even when there are no other causes for the same effect). Therefore:

Positive Link Polarity:

X has a positive influence on Y if an increase (decrease) in X results in a value of Y which is greater (less) than it would have been had X not changed. In the case of accumulations, X adds to Y.

Negative Link Polarity:

X has a negative influence on Y if an increase (decrease) in X results in a value of Y which is less (greater) than it would have been had X not changed. In the case of accumulations, X subtracts from Y.

Reinforcing and Balancing Causal Loops

For determining whether a causal loop is reinforcing or balancing, one can start with an assumption, e.g. „a node increases" and follow the loop around. The loop is:

- Reinforcing if, after going around the loop, one ends up with the same result as the initial assumption.

- Balancing if the result contradicts the initial assumption.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Or to put it in other words:

- Reinforcing loops have an even number of negative links (zero also is even),

- balancing loops have an uneven number of negative links.

Identifying reinforcing and balancing loops is an important step for identifying reference behaviour patterns, i.e. possible dynamic behaviours of the system.

- Reinforcing loops are associated with exponential increases/decreases.

- Balancing loops are associated with reaching a plateau.

A CLD, or rather a causal loop within a larger causal diagram with potentially multiple loops, has an overall nature or "identity" that is indicated by its polarity - its feedback structure which is either balancing or reinforcing.

- Reinforcing loop identifier: "R"

- Balancing loop identifier: "B"
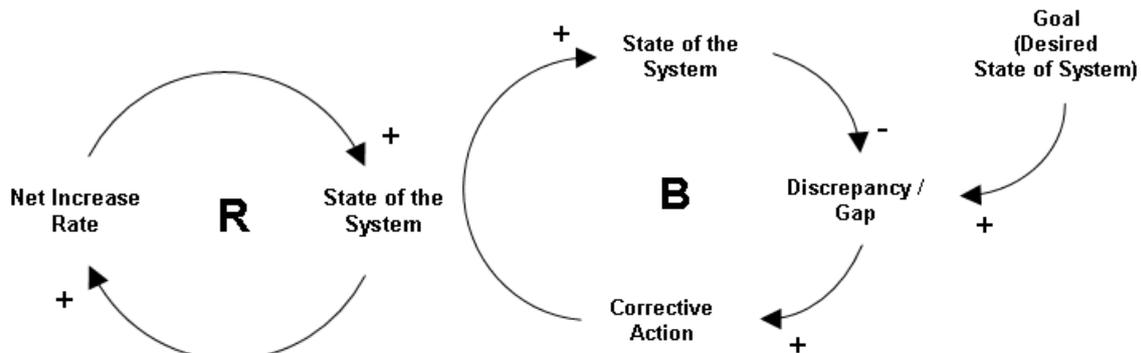
Figure: Positive (*R*einforcing) and negative (*B*alancing) Loop

Time Delays

A time delay occurring between the action of one variable and the reaction of the next variable in a loop is indicated by two short parallel lines with perpendicular crossing of the arrow representing the causal link between the two variables. If the system has delays, the system might fluctuate.
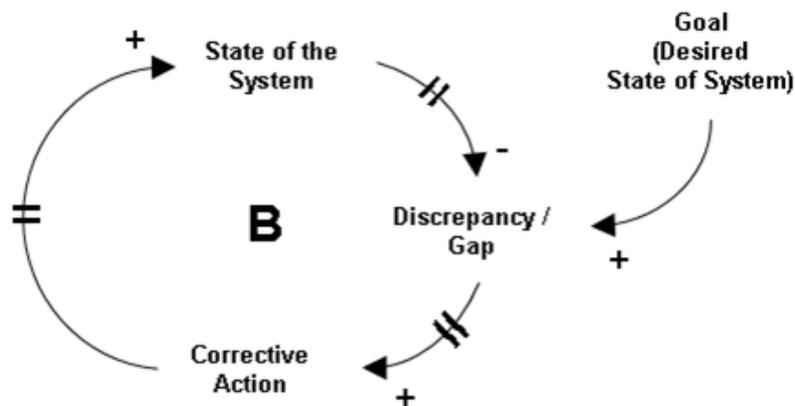

Figure: Negative feedback loop with three delays.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Overview of Influence Models

Influence models outlined by this Annex:

- Influence Models "Network Society"
    - o "Interdependence between Society and Media"
    - o "Marxist Media Theory and Dependency Theory of Development"
- Influence Model "Integrated Communication"
- Influence Model "Charisma and Persuasion"
- Influence Models "Credibility"
    - o "Source Credibility and Impact of Messages"
- Influence Models "Opinion, Attitudes, and Behaviour"
    - o "Influence of Attitudes on Behaviour"
    - o "Cognitive Dissonance"
    - o "Self-Standards and Self-Esteem"
    - o "Belief-Relevant Knowledge"
- Spatial-Spring Model of Cognitive Forces
- Influence Model "Insurgency Media Manipulation"

Influence Models

Influence Model "Network Society"

The information and communication system and the society we live in today are termed the Network Society. It is characterized by a change in its form of social organization made possible by the emergence of the information technologies in a period that coincides with a need for economic change (characterized by the globalization of the exchange and movement of money) and social change (characterized by the search to affirm new liberties and individual choice values). In this Network Society, the autonomy of decision is directly linked to our capacity of interaction with the media (which here are understood as the apparatuses of mediation and access to communication and information).

As the human species is characterized by communication, it is communication that sustains the social fabric we create and in which we live.

The complexity of our societies establishes the need for permanent interaction with, and between, spatially differentiated zones and different areas of social, professional and cultural relations.

Broadcasting markets have been liberalised, making it possible to launch private television channels at the national, regional and local levels. Broadcasters have been allowed to operate abroad, sometimes subject to certain restrictions.

The changes in the political and economic systems in the Central and Eastern European countries have eliminated state monopoly in the media sector. In newly competitive markets, economically weak national media companies were ripe for take-overs or bankruptcy. As a result Western companies rushed into the region and established a dominant presence.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

The advent of the Internet as the basic infrastructure of the emerging information society has created many opportunities for media expansion in cyberspace. At the same time, of course, traditional media corporations are threatened in their core businesses (especially print newspapers) by new media and software and Internet companies like Microsoft, Google and Yahoo!.

Advances in skills and the localisation of cultural products in sectors such a magazines or newspapers and the increasing acceptance of generic formats such as in reality TV programmes have reduced cultural barriers.
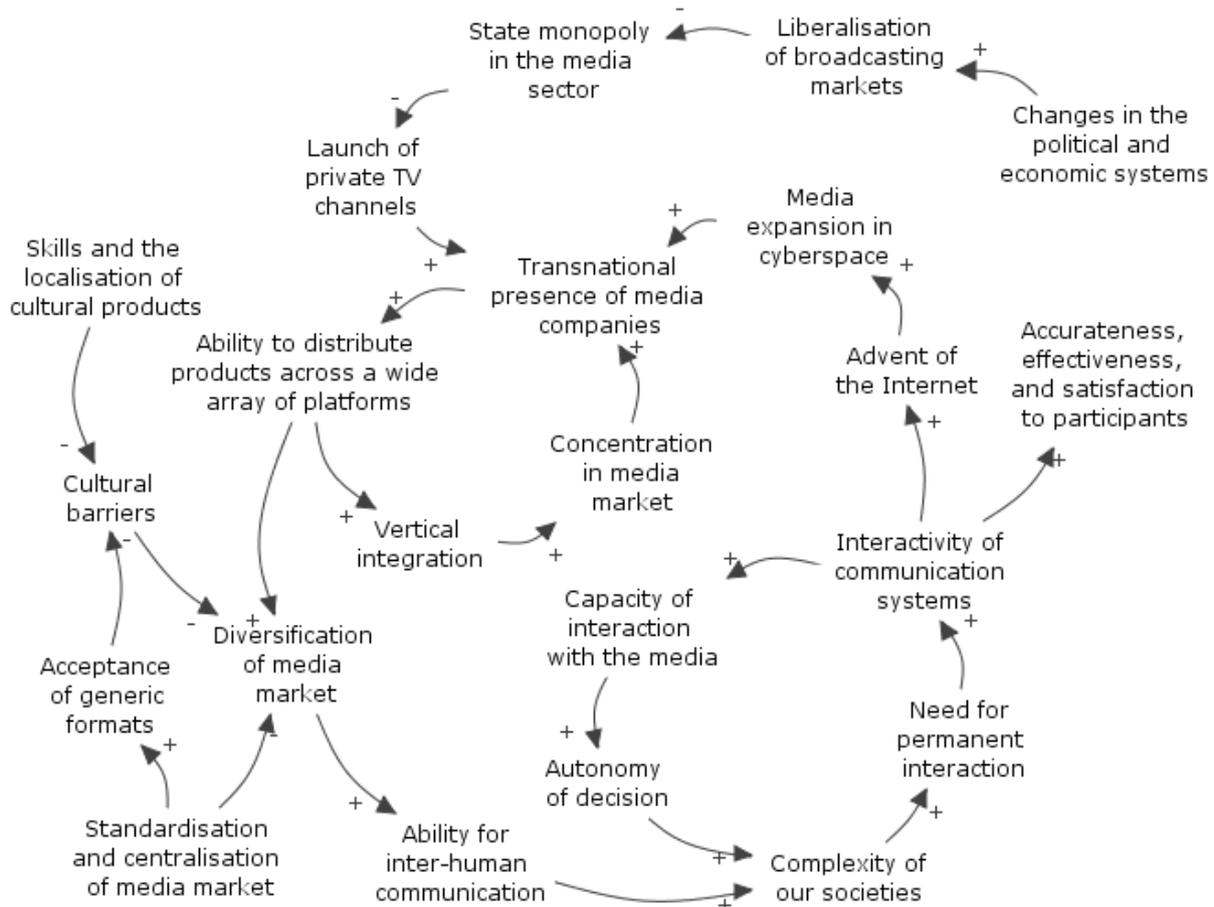
Figure: The Role of Media in Terms of its Interaction with the Wider Information Environment where Belong to as an Information System – Methodology for analysis, indicators – filters and variables that are used by the Media in order to understand the information environment

At the same time there are fears that the media will become standardised and centralised. The argument that the choice of media has never before been so broad is true. But this is a simplified picture of reality, since a small number of companies often control both distribution channels and the content distributed. The increase in the absolute number of offers do not necessarily lead to more diversity, i.e. different offers, instead it may lead simply to more of the same. This happens because companies attempt to maximize synergies i.e., among other things, their ability to use centrally produced content across different media and different countries.

Media ownership is increasingly concentrated. At the same time, media conglomerates are now able to deliver a diversity of products over one platform as well as one product over a diversity of platforms. The largest media organizations

now not only own more properties than ever before, but the content that these companies create is delivered via an increasing number and variety of platforms, many of which they also own. All of the leading firms are vertically integrated.

Vertical integration has increased largely because the ability to distribute products across a wide array of platforms has become a precondition for the success of more and more cultural products.

All of the new communication systems have at least a certain degree of interactivity, something like a two-person, face-to-face conversation. Interactivity is the capability of new communication systems to talk back to the user, almost like an individual participating in a conversation. The new media are interactive in a way that the older, one-to-many mass media could not be. Interactivity is a desired quality of communication systems because such communication behaviour is expected to be more accurate, more effective, and more satisfying to the participants in a communication process. These advantages usually come at the cost of more communication message exchanges and greater time and effort required for the communication process.

The new media represent an expanded accessibility for individuals in the audience, with a wider range of alternative conduits by which information is transmitted and processed. Compared to the one-way media, the contents of new communication technologies are more likely to be informational, rather than just entertainment.

At issue are the alternative ways of relating three basic elements: technology of communication; form and content of media; changes in society (social structure, institutional arrangements, the distribution of opinion, beliefs, values and practices). We should expect no single theory to apply universally to all aspects of such a complex matter.

Based on:

- The Role of Media in Terms of its Interaction with the Wider Information Environment where Belong to as an Information System – Methodology for analysis, indicators – filters and variables that are used by the Media in order to understand the information environment, Hellenic National Defense General Staff Study, Athens (February 2010).

Interdependence between Society and Media

Society produces the demands for information and entertainment to which media respond, the resources of money and time needed for the growth of media industries, the inventions on which they are based, the social-culture climate in which they are free to operate. Mass communication in turn, stimulates change, accelerates the demands for its own services, contributes to the climate of cultural and political freedom in which media can themselves better operate, and diffuses new ideas and innovations.

Media encourage and help to diffuse a personal value system which is favourable to innovation, mobility, achievement and consumption.

Applying media in large-scale programmes of development extends public education and promote innovation in agriculture, health practice, population control, and other social and economic matters. The theory is widely applied and not irrelevant for developed countries where media are used in campaigns with social change as an objective, especially in the fields of health and education.
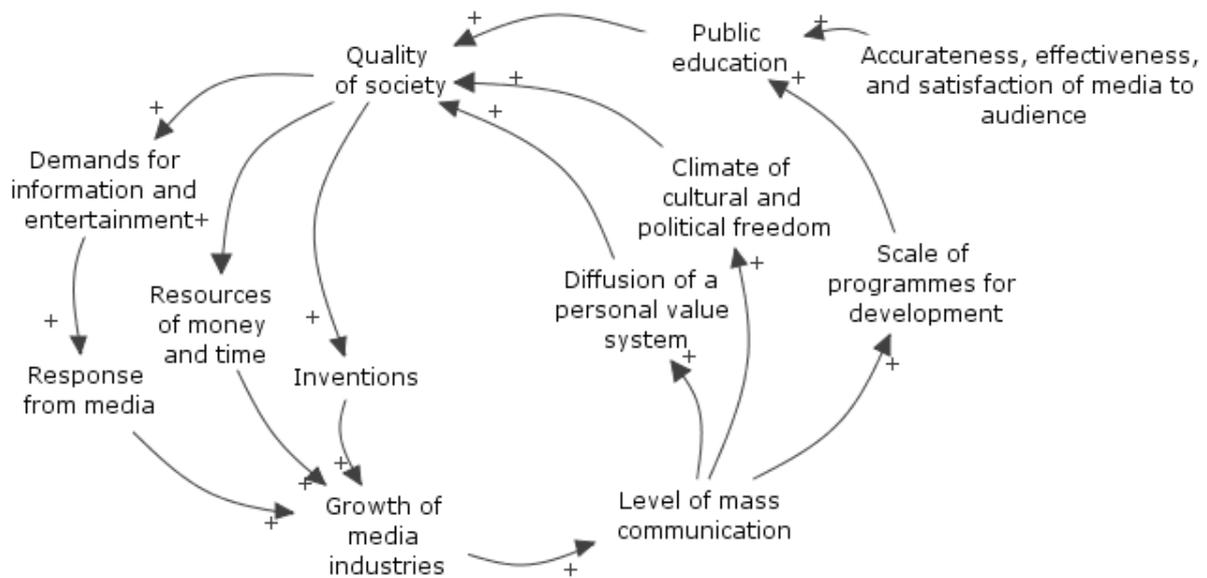
Figure: Mutual influences between media and society

Based on:

- The Role of Media in Terms of its Interaction with the Wider Information Environment where Belong to as an Information System – Methodology for analysis, indicators – filters and variables that are used by the Media in order to understand the information environment, Hellenic National Defense General Staff Study, Athens (February 2010).

Marxist Media Theory and Dependency Theory of Development

The central position of traditional sociology is that individual behaviour is shaped by social forces arising from the structure of relationships and meanings of a society. In general, culture is also seen as dependent on the structure of society and insofar as mass communication is a cultural phenomenon it will be dependent on society and not itself a cause.

Marxist theory posits a direct link between economic ownership and the dissemination of messages which affirm the legitimacy and the value of a class society. The key is always ownership, whether by the capitalist class, the bourgeois state, the working class or the socialist state. The work of media belongs essentially to the sphere of superstructure (ideas, ideology, and consciousness) and is determined essentially by economic forces.

Dependency theory portrays the media as frequently part of the system of exploitation by foreign capital and acting to increase and reinforce the state of dependence. The related theory of media imperialism contains both materialist and idealist elements, since it points both to technological and economic dependence on the capitalist world and to cultural penetration by the values favourable to capitalism. The media thus act to hold back change, except within the framework of capitalist growth (seen as ultimately regressive). For media to have a positive role in change would require a major structural change giving ownership and real autonomy to the developing nation and especially to elements at the basis of society. Dependency theory is thus ultimately a theory of structure rather than culture in relation to mass media.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010
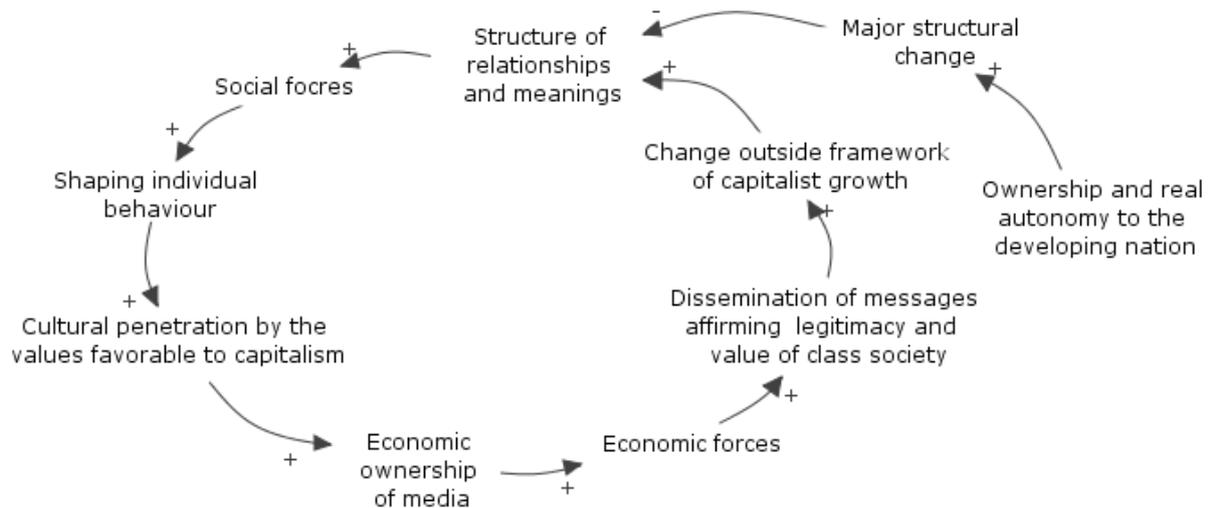
Figure: Marxist media theory and dependency theory of development

Based on:

- The Role of Media in Terms of its Interaction with the Wider Information Environment where Belong to as an Information System - Methodology for analysis, indicators-filters and variables that are used by the Media in order to understand the information environment, Hellenic National Defense General Staff Study, Athens (February 2010).

- O. Boyd-Barrett, Cultural Dependency and the Mass Media, in M. Gurevich (ed.) Culture, Society and the Media. London: Methuen (1982).

Influence Model "Integrated Communication"

The following list of prospective assumptions describes the conceptual approach to integrated communication in multinational coalition operations within a Comprehensive Approach:

- (H1) Closing the Say-Do-Gap: IF communication is thoroughly understood as a process of exchanging messages by words and deeds, THEN consistent and thus more effective activity will be promoted.

- (H2) Common Guidance Issued: IF there is common guidance for coalition information activities issued by strategic-political authorities, THEN contradictory messaging by coalition partners will be minimised.

- (H3) Leadership-Driven: IF communication is leadership-driven, THEN it will become effective throughout all levels of involvement ('vertical dimension').

- (H4) Understanding the Audience: IF an audience-oriented approach to communication is applied, THEN discontinuity of messages and perceptions can be minimised.

- (H5) Network of Experts Established: IF there is a network of communication experts110 from all partners established at the earliest stage of coalition-building (or even before), THEN consistent integration of communication by all partners will be facilitated ('horizontal dimension').

- (H6) Common Identity Promoted: IF a common coalition identity is promoted through internal communication along the coalition's vision, THEN coalition

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

external communication efforts can purposefully assist the achievement of a desired image and credibility.

- (H7) Narrative Shared and Implemented: IF a coalition narrative is shared and implemented by all partners, THEN targeted messaging by coalition partners will be consistent.
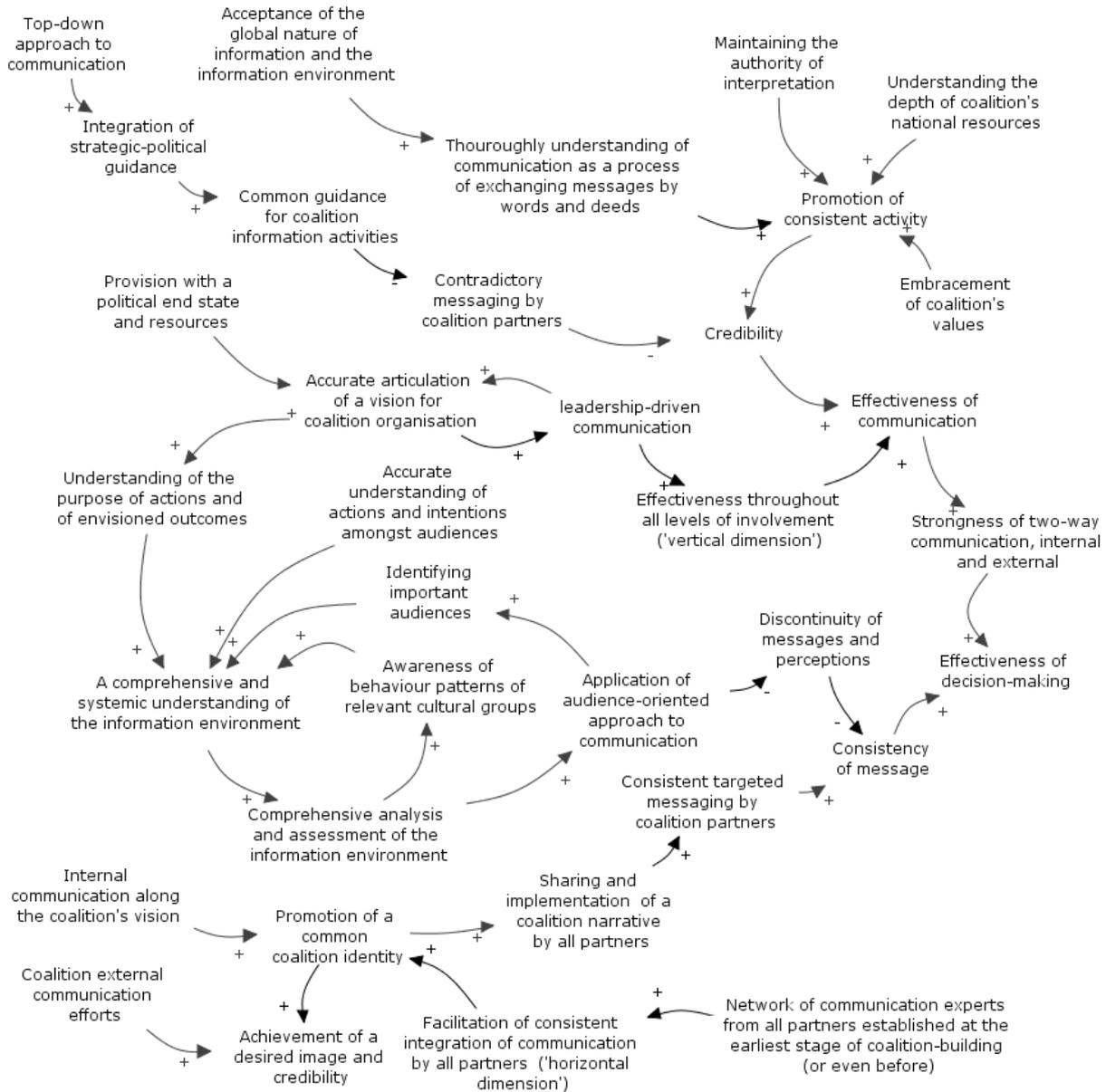

Figure: Framework concept of integrated communication in multinational coalition operations within a Comprehensive Approach

In order to avoid misperceptions and false expectations, coalition actors in international crisis management must fully understand the depth of their national resources so that they do not promise more than they can deliver.

Closing the 'say-do gap' will promote credibility and thus effectiveness through an accurate understanding of actions and intentions amongst audiences.

If we fail to explain our actions appropriately, somebody else will do it for us. Coalition actors should always strive for maintaining the authority of interpretation.

Effective communication builds on the understanding and engaging of foreign and domestic audiences within a comprehensive approach.

Coalition information activities comprise national, strategic-political initiatives as well as in-theatre, implementation-level activities. This view originates from the acceptance of the global nature of information and the information environment, and reflects the fact that each and every activity of the coalition and its partners – regardless of the intended purpose and the respective level of involvement – will be perceived indiscriminately and automatically assigned to the combined multinational effort by the concerned local/regional audience(s). Therefore, coalition communication requires high-level guidance in order to be able to generate a series of coordinated, combined and synchronised information activities that assist the achievement of mission objectives.

Strategic-political guidance for information activities must be fully integrated with and supportive of the multinational approach to crisis management.

High-level guidance must be issued by the political leadership of the coalition ('strategic-political authority') at the earliest stage possible and updated to meet situational requirements throughout the operation/mission.

Focused and purposeful activity at all levels requires that all actors understand the purpose of their actions and consider the envisioned outcomes feasible within the scope of their individual and group capability. Coalition leaders cannot accurately articulate a vision for their organisation unless superior political leadership provides them with a political end state and resources to accomplish this end state.

Strong two-way communication, internal and external, and consistency of message will support more effective decision-making, better feedback to our stakeholders and improved staff efficiency and morale.

Integrated communication must build on helping the coalition senior leadership achieve their objectives by identifying important audiences, developing strategic and consistent messages and delivering those messages with maximum effectiveness.

Key to an audience-oriented approach to information activities is a comprehensive analysis and assessment of the information environment gauging the most effective ways of reaching the audience, which must be conducted prior to the launch of any operation and carried on throughout its execution.

International crisis management demands awareness of behaviour patterns of relevant cultural groups, and that we adapt own activity accordingly.

A comprehensive and systemic understanding of the information environment by all decision makers and their staffs, combined with an enhanced cultural literacy, should be the ultimate goal for integrating the information factor throughout analysis, planning, execution/management and assessment/ evaluation of operations.

A coalition's understanding of the information environment begins with the partners' understanding of themselves and the acceptance of the coalition as their organisation.

Cultural awareness is a first step in developing the required intercultural competences for effective cross-cultural communication.

The coalition needs to embrace its values in order to improve the coalition's credibility, and to be able to project these values accordingly.

Based on:

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

- Framework Concept Integrated Communication in Multinational Coalition Operations within a Comprehensive Approach, Second Draft, Revised Version 1.0, Strausberg (01 July 2010).

Influence Model "Charisma and Persuasion"

There are three fundamental communicator characteristics: authority, credibility, and social attractiveness. Authorities, credible communicators, and attractive ones produce attitude change through different mechanisms.
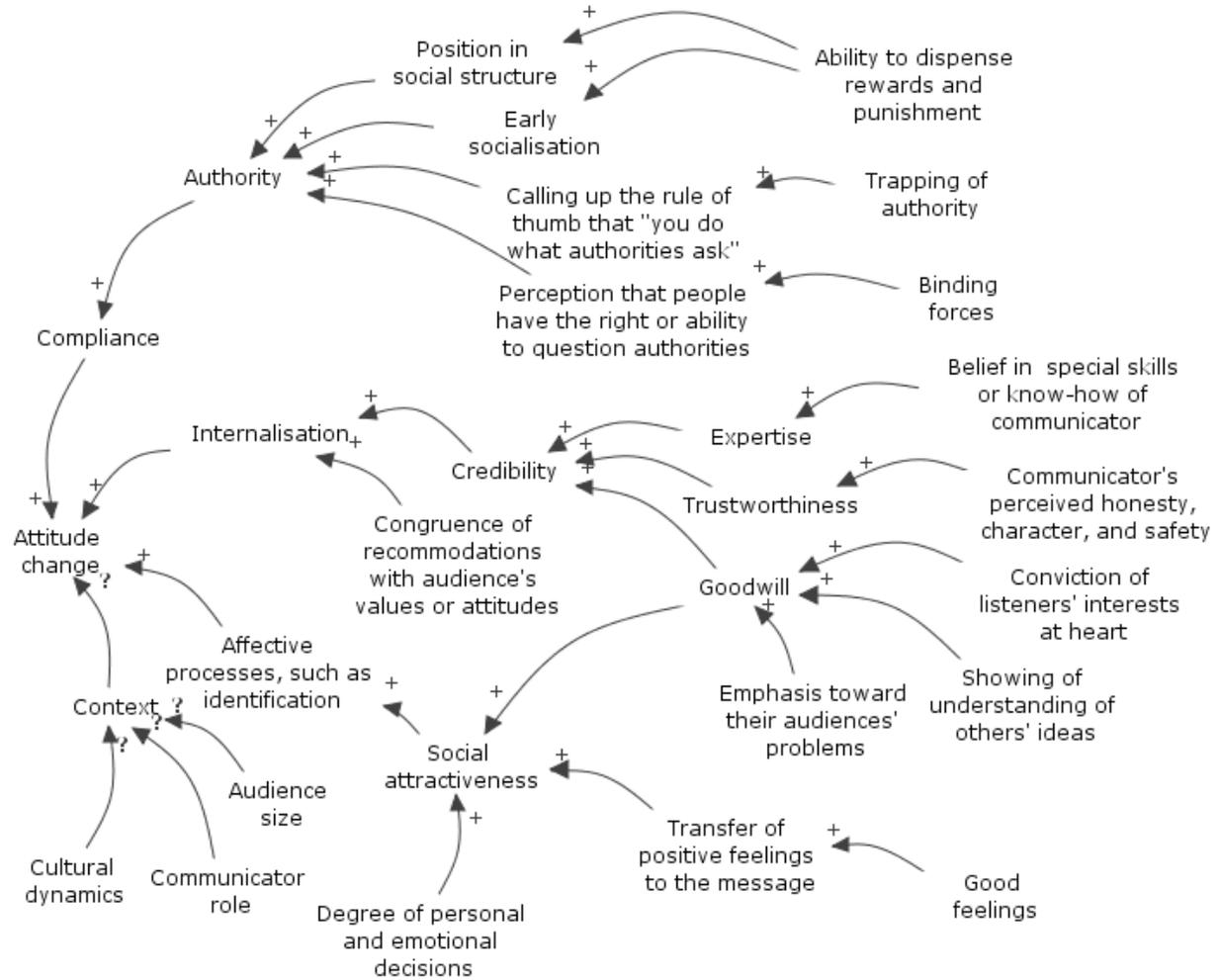

Figure: Charisma and Persuasion

Authority emanates from a person's position in a social structure. It involves the ability to dispense rewards and punishment. Authorities frequently influence others through compliance. Individuals adopt a particular behaviour not because they agree with its content, but because they expect "to gain specific rewards or approval and avoid specific punishments or disapproval by conforming". Early socialisation of people makes them to obey authority, and they get rewarded for doing so. Trapping of authority serves as peripheral cues, calling up the rule of thumb that "you do what authorities ask." Binding forces hinder the perception that people have the right or ability to question authorities.

Credible communicators influence attitudes through internalisation. We accept recommendations advanced by credible communicators because they are congruent

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

with our values or attitudes. Credibility is defined as "the attitude toward a source of communication held at a given time by a receiver." Credible communicators are perceived as having expertise, trustworthiness, and goodwill. Expertise is the belief that the communicator has special skills or know-how. Trustworthiness refers to the communicator's perceived honesty, character, and safety. Communicators who display goodwill convey that they have listeners' interests at heart, show understanding of others' ideas, and are emphatic toward their audiences' problems. The context is a complicating factor which includes audience size, communicator role, and cultural dynamics.

Attractive communicators seem to achieve influence through more affective processes, such as identification. People go along with attractive speakers because they identify with them, or want to establish a positive relationship with the communicators. Likability of the communicator (1) makes you feel good, and the positive feelings become transferred to the message, (2) puts you in a good mood, which helps you access positive thoughts about the message, and (3) conveys that he has your interest at heart, which communicates goodwill. Similarity between communicator and audience can facilitate persuasion if the similarity is relevant to the message. Similarity is more effective when people must make personal and emotional decisions. Attractiveness influences attitudes because (1) people are more likely to pay attention to an attractive speaker, and this can increase the odds that they will remember message arguments, (2) it becomes associated with the message, and (3) people like and identify with attractive communicators.

Based On:

- Richard M. Perloff, The Dynamics of Persuasion, Communication and Attitudes in the 21st Century, Second Edition, Lawrence Erlbaum Associates (2003).

- H. C. Kelman, Compliance, identification, and internationalization: Three processes of attitude change, Journal of Conflict Resolution, 2, 51-60 (1958).

Influence Model "Credibility"

The fundamental construct of credibility has been influenced by changing concepts of communication. The Greek philosophers Plato and Aristotle laid out the fundamental questions. They suggested that credibility might emanate from a confident knowledge of the truth or grow from a communicator's ability to read the needs of the audience.

Modern communication researchers began the systematic empirical study using the hypodermic-needle model. They have examined source and media characteristics, message characteristics and the familiarity of the message, and audience demographics and credibility. The hypodermic needle model (also known as the hypodermic-syringe model) is a model of communications also referred to as the "magic bullet" perspective, or the transmission-belt model. Essentially, this model holds that an intended message is directly received and wholly accepted by the receiver. The model is rooted in 1930s behaviourism and is largely considered obsolete today.

The two step flow model assumes that ideas flow from the mass media to opinion leaders and then to the greater public. They believed the message of the media to be transferred to the masses via this opinion leadership. Opinion leaders are categorized as individuals with the best understanding of media content and the most

accessibility to the media as well. These leaders essentially take in the media's information, and explain and spread the media's messages to others.

Figure: Credibility

Today it has become clear that credibility is an exceedingly complex construct. Researchers have identified many dimensions of source characteristics. They found that not only manipulating messages changes their credibility, but repeating them or changing their position on a message alters the message's believability. They discovered that the audience hearing or viewing a message is extremely active in shaping its meaning based upon individual needs and experience. New cultural theories have yet to be brought to bear on this problem.

Based on:

- Charles C.Self, Credibility, in: An Integrated Approach to Communication Theory and Research, edited by Michael B. Salven, Don W. Stacks, Lawrence Erlbaum Associates, Mahwah, New Jersey (1996).

- Paul Felix Lazarsfeld, Bernard Berelson, Hazel Gaudet, The people's choice: how the voter makes up his mind in a presidential campaign, Columbia University Press, p. 151ff (1944).

- Elihu Katz, "The Two-Step Flow of Communication: An Up-To-Date Report on a Hypothesis", The Public Opinion Quarterly 21:1, pp. 61-78 (Spring, 1957).

- E. Katz, P.F. Lazarsfeld, Personal Influence: the Part Played by People in the Flow of Mass Communication's, 309 (1955).

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

## Source Credibility and Impact of Messages

Figure: Source Credibility and Impact of Messages

Credibility, as a complex concept, "is more than a psychological characteristic. It is also a communication variable. It is part of the two-way interaction between communicator and message recipients – a dynamic entity that emerges from the transaction between source and audience member. This means that communicators are not guaranteed credibility by virtue of who they are, their title, or academic pedigree. […] Credibility can only be earned by paying the price of effective communication […] There is something democratic about credibility. It says that communicators have to enter the rough-and-tumble realm of persuasion. They must meet and greet – either interpersonally or electronically – those they seek to influence. They must earn an audience's respect and win its credibility." [Perloff 2003], p. 160. Following these thoughts and findings, a first iteration on this relational concept can be conducted as a cognitive map (see figure above).

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Source credibility (credibility of a mass medium perceived by an audience) is positively influenced by the trustworthiness (in the sense of reliability) of the source, familiarity with the source, perception of rightness of messages, and by the credulity of the audience.

On the other hand, bad behaviour and poor professional practice of journalists have negative influence on source credibility. It is supposed that the impact of messages on audiences is dependent on the believability[93] of messages which itself is positively dependent of source credibility. Higher source credibility also increases the credibility even of false statements (which are a part of messages). Familiarity with the source leads to an increased credibility of these false statements. Additionally, the perception of the messages' rightness has positive influence on the perceived knowledge of truth of the source, which itself has positive impact on the trustworthiness of the source. A reinforcing loop can be detected regarding these factors:
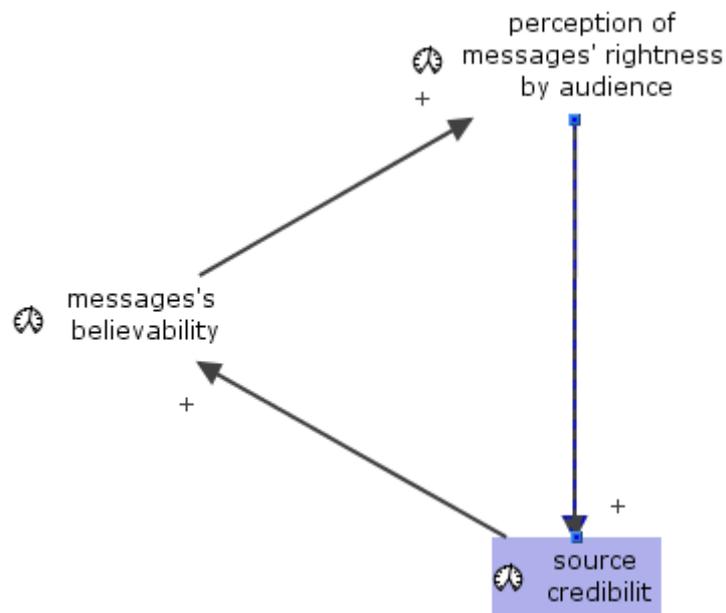

Figure: Source Credibility

Furthermore, messages' believability is positively influenced by the judged validity of the message which itself is simply positively influenced by repeating messages. This effect is being used in the area of advertising.

It is assumed that messages' believability has positive influence on the impact of a message which is also positively influenced by the persuability of the audience. Communicative competence and especially media literacy offers techniques and skills that should protect audiences from extremist communication and propaganda. Therefore, ego-involvement of recipients is positively interlinked with cognitive

---

[93]   Explanation of the difference between "credibility" and "believability": Someone may tell you a story that seems "credible". That is, it seems reasonable that it could happen. However, you may not find the story "believable". That is, you may not believe that it really did happen. (Internet http://dict.leo.org/forum/viewUnsolvedquery.php?idThread=35231&idForum=2&lp=ende&lang=de, seen 18 August 2010)

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

processing which decreases the credulity of the audience and thus the credibility of the source.

Of course, the communicator tries to match his messages to audience needs. A increased trustworthiness of the source will be the result of this effort, and a increased amount of shared involvement patterns which additionally increase the messages' believability.

It is important to note that source credibility is also influenced by characteristics of the source, such as the type of mass media, and the attractiveness of involved communicators: "Credibility is an important factor in persuasion. But it is not the only communicator characteristic that influences attitudes. Socially attractive communicators – those who are likeable, similar to message recipients, and physically appealing – can also induce attitude change." [Perloff 2003], p. 168. Therefore, a profound and applicable understanding of credibility and related concepts like persuasion needs further analysis.

Based on:

- Self, Charles C.: Credibility, In: An Integrated Approach to Communication Theory and Research, edited by Michael B. Salven, Don W. Stacks, Lawrence Erlbaum Associates, Mahwah, New Jersey (1996).

- Hauptmeier, Helmut: Projektbericht „MiA". - Medienwirkungsmessung in Afghanistan. - Universität Siegen, 2010.

- Perloff, Richard M.: The Dynamics of Persuasion. Communication and Attitudes in the 21st Century. Lawrence Erlbaum Associates: Mahwah, New Jersey; London, 2003.

Influence Models "Opinion, Attitudes, and Behaviour"

The Influence of Attitudes on Behaviour

The theory of planned behaviour by Fishbein and Ajzen builds the theoretical basis for the Georgson Conflict Manager (CGM), a measurable activity management system. To actually create a lasting peace we must change the stakeholder's behaviour. It is very concrete, they must stop fighting and they must find a way to coexist side by side within the same area. This is behaviour. But we all know that people act on their beliefs and attitudes. So what we really have to do is to change people's beliefs and attitudes.

Theory of planned behaviour explains that a person base their decisions not only on their own belief but also on what they think people around them think in this particular matter as well as what they think they are able to do.

In psychology, the theory of planned behaviour is a theory about the link between attitudes and behaviour. It was proposed by Icek Ajzen as an extension of the theory of reasoned action. It is one of the most predictive persuasion theories. It has been applied to studies of the relations among beliefs, attitudes, behavioural intentions and behaviours in various fields such as advertising, public relations, advertising campaigns and healthcare.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010
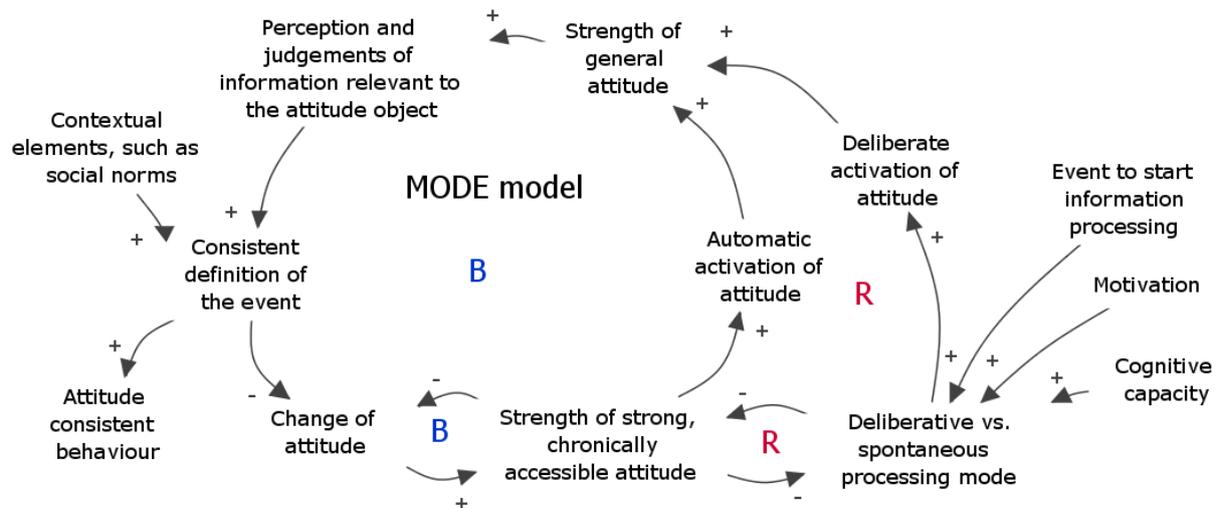
Figure: The MODE model for the influence of attitudes on behaviour

General attitude can influence or bias perception and judgement of information relevant to the attitude object, a bias that is congruent with the valence of the attitude. However, for this bias to occur, the attitude must first be activated. The Mode model (The acronym MODE is used to suggest that "Motivation and Opportunity act as Determinants of spontaneous versus deliberative attitude to behaviour processes") assumes that attitudes can be activated in a controlled, deliberate fashion or in an automatic, spontaneous fashion. When people are sufficiently motivated and have the cognitive capacity to do so, they can retrieve or construct their attitudes toward an object. The attitude is defined as a learned association in memory between an object and a positive or negative evaluation of that object, and attitude strength is equivalent to the strength of this association. The automatic, spontaneous attitude activation occurs when a strong link has been established in memory; the stronger the attitude, the more likely it is that it will be automatically activated and, hence, be chronically accessible from memory.

Individuals who hold favourable attitudes are likely to notice, attend to, and process primarily the object's positive attributes, whereas individuals with unfavourable attitudes towards the object are likely to direct attention to its negative qualities. These perceptions of the object (and relevant contextual elements, such as social norms) influence the person's definition of the event, possibly directing attention to positive or negative consequences of performing the behaviour in line with the positive or negative evaluation of the object.

Based on:

- R. H. Fazio, Multiple processes by which attitudes guide behaviour: The MODE model as an integrative framework. In M.P. Zanna (Ed.) Experimental Social Psychology, Vol. 23, 75-109, San Diego, CA: Academic Press (1990).

- Icek Ajzen, Martin Fishbein, The Influence of Attitudes on Behavior, in The Handbook of Attitudes, edited by Dolores Albarracin, Blair T. Jonson, Mark P. Zanna, Lawrence Erlbaum Associates, Mahwah, New Jersey (2005).

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Cognitive Dissonance

According to cognitive dissonance theory, there is a tendency for individuals to seek consistency among their cognitions (i.e., beliefs, opinions). When there is an inconsistency between attitudes or behaviours (dissonance), something must change to eliminate the dissonance. In the case of a discrepancy between attitudes and behaviour, it is most likely that the attitude will change to accommodate the behaviour.

Two factors affect the strength of the dissonance: the number of dissonant beliefs, and the importance attached to each belief. There are three ways to eliminate dissonance: (1) reduce the importance of the dissonant beliefs, (2) add more consonant beliefs that outweigh the dissonant beliefs, or (3) change the dissonant beliefs so that they are no longer inconsistent.

Dissonance occurs most often in situations where an individual must choose between two incompatible beliefs or actions. The greatest dissonance is created when the two alternatives are equally attractive. Furthermore, attitude change is more likely in the direction of less incentive since resulting in lower dissonance. In this respect, dissonance theory is contradictory to most behavioural theories which would predict greater attitude change with increased incentive (i.e., reinforcement).

Dissonance theory applies to all situations involving attitude formation and change. It is especially relevant to decision-making and problem-solving.
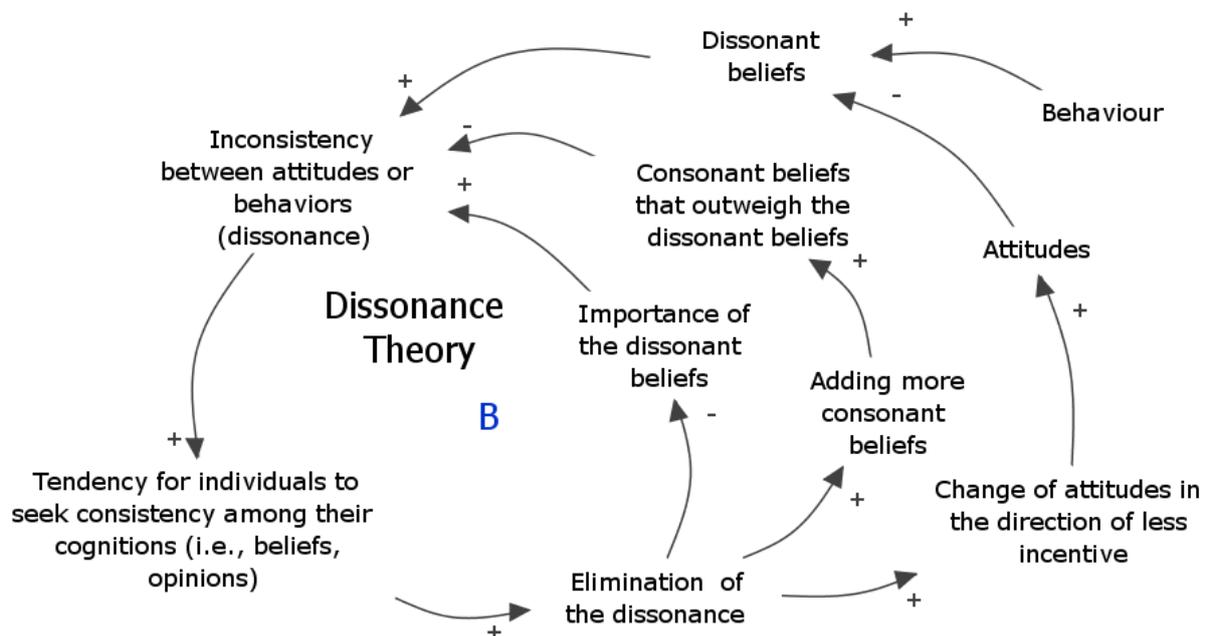

Figure: Cognitive Dissonance

Based on:

- James M. Olson, Jeff Stone, The Influence of Behavior on Attitudes, in The Handbook of Attitudes, edited by Dolores Albacin, Blair T. Jonson, Mark P. Zanna, Lawrence Erlbaum Associates, Mahwah, New Jersey (2005).
L. Festinger, A Theory of Cognitive Dissonance. Stanford, CA: Stanford University Press (1957).

- Cognitive Dissonance (L. Festinger) (August 2010).
  http://tip.psychology.org/festinge.html

Influence Model "Self-Standards and Self-Esteem"

The Self-Standards Model (SSM) maintains that once people have acted, they evaluate their behaviour against a standard of judgement, and that standard of judgement may or may not relate to a cognitive representation of the self.

If normative standards of judgement are made salient in the context, then people interpret and evaluate their behaviour using rules and prescriptions followed by most people in the culture. If the behaviour represent a discrepancy from the salient normative standards, then a nomothetic dissonance will be aroused, this will not be moderated by self-concept differences.

The SSM predicts that if personal standards are made salient in the context, then the behaviour is compared to one's own, idiosyncratic self-expectancies. As a result, people with high self-esteem, who hold more positive expectancies for their behaviour, are more likely to perceive the behaviour as a discrepancy and show more attitude change.
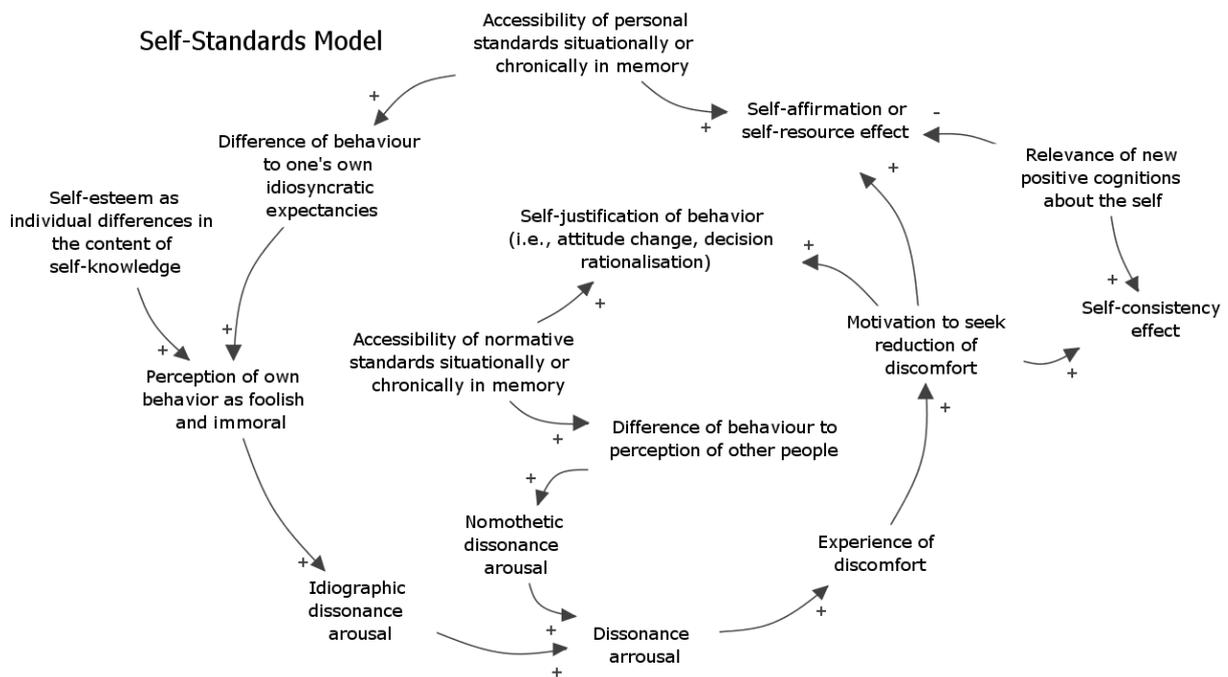

Figure: The Self-Standards Model

Once dissonance is aroused, the SSM assumes that people will experience negative emotion and be motivated to reduce it. If no further self-relevant thought occurs, the discrepancy will remain salient, and people will change their attitudes to reduce their discomfort. If new positive recognitions about the self are made accessible in the context, however, the strategy for dissonance reduction turns on the relevancy of self-attributes to the behavioural discrepancy and the level of a person's self-esteem.

If relevant positive attributes activate self-expectancies, people with a high self-esteem experience more discomfort than people with low self-esteem. If indications in the situation make accessible positive attributes that are irrelevant to the discrepancy, the people with high self-esteem will use them as a resource for

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

dissonance reduction. Those with low self-esteem, who have fewer positive self-attributes in the self-knowledge structure, rely instead on attitude change to reduce their discomfort.

Based on:

- Jeff Stone and Joel Cooper, A self-Standards Model of Cognitive Dissonance, Journal of Experimental Social Psychology, 37, 228-243 (2001).

- James M. Olson, Jeff Stone The Influence of Behavior on Attitudes, in The Handbook of Attitudes, edited by Dolores Albarracin, Blair T. Jonson, Mark P. Zanna, Lawrence Erlbaum Associates (2005).

Belief-Relevant Knowledge

The theories about retrieval and use of belief-relevant knowledge can be summarised in four postulates:

1. The likelihood of retrieving and using a piece of belief-relevant knowledge is a positive function of the recency with which the knowledge has bee acquired or used in the past (Recency).

2. The likelihood of retrieving and using a piece of belief-relevant knowledge is a positive function of the frequency with which it has been encountered and used in the past (Frequency).

3. The likelihood that exposure to one unit of knowledge stimulates the retrieval and use of a second unit increases with the extent to which the two units of knowledge have been thought about in relation to one another (Strength of Association).

4. If a configuration of information is comprehended in terms of a more general schema, features that are not mentioned in the information but instantiate features of the schema will be spontaneously added to the representation as it is formed and, therefore, will later be recalled as actually having been mentioned (Schematic Processing).
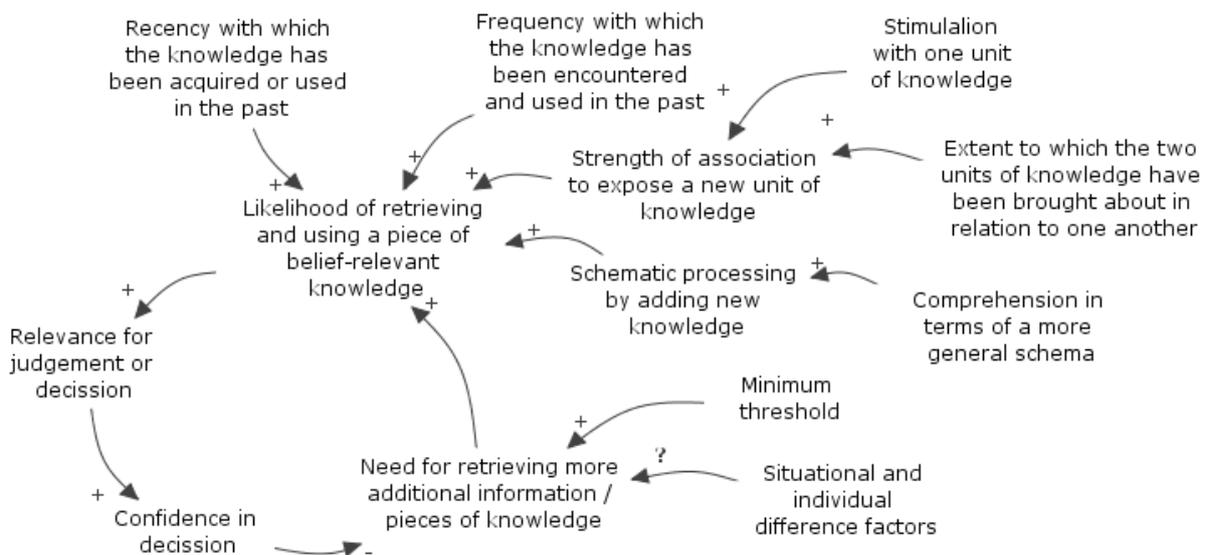

Figure: Belief Formation, Organisation, and Change

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

The implications of these postulates for belief formation and change become important for the accessibility of knowledge. People typically do not bring all of the relevant knowledge they have available to bear on a judgement or decision. Rather they rely on only a small amount of this information that comes to mind easily at the time. When people are required to make a judgement or decision, they first apply the criterion that is quickest and easiest to use and assess their confidence that the implications of this criterion are valid. If the confidence is above a minimum threshold, they base their response on this criterion without further consideration. However, if their confidence is below the threshold, they apply additional criteria, and continue in this manner until either their threshold is reached or alternatively they do not have the time to engage in further processing. Situational and individual difference factors will consequently determine the number of criteria they employ. In general only a small amount of knowledge will be involved.

Based on:

- Robert S. Wyer Jr., Dolores Albarracin, Belief Formation, Organization, and Change: Cognitive and Motivational Influences, in The Handbook of Attitudes, edited by Dolores Albarracin, Blair T. Johnson, Mark P. Zanna, Lawrence Erlbaum Associates (2005).

A Spatial-Spring Model of Cognitive Forces

The following influence diagram is an example for the use of causal-loop diagrams as a precursor for the development of a stock & flow simulation based on a system of differential equations.

The spatial-spring model of cognitive forces is explicitly aimed at describing and explaining belief change during judgment. A mechanistic metaphor for belief change is used, and mathematically derived trajectories of belief change during judgment.

The model was built on two mechanical metaphors for belief systems. Like an object in a physical system, a concept in a cognitive system is considered to have both a location and a mass in a cognitive space. Belief change is equivalent to motion of a concept in the cognitive space. The model assumes that "the amount of acceleration of a concept will be equal to the amount of force acting upon the concept divided by the mass of that concept as in Newtonian mechanics".

The model also assumes that concepts in a cognitive space may be linked with each other and that the linkages are spring-like rather than brace-like. Like the operation of a mechanical spring, the model assumes that when a concept is moving, two opposing forces operate: a force moving the concept away from the initial location and a force restoring the initial position. The existence of restoring forces has been supported to a limited extent by cognitive oscillations found empirically. The spring-like linkage model suggests a parameter for the damping of cognitive motion. Just as the motion of a spring dies out when beliefs oscillate, it appears that such oscillations usually die out. The model assumes a cognitive damping process, in which the patterns of oscillation of the cognitive system depend on the size of the damping forces as compared to the restoring forces.

Based on the above assumptions, the force created by a spring-like linkage between two concepts is proportional to the difference of the linkage (distance) between concept A and concept B in the recipient's cognitive space before the recipient

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

receives the message and the equilibrium distance of the linkage, which is the dissimilarity between concepts A and B specified in the message.

Restoring coefficients represent the strength of the spring; it is an increasing function of source credibility of the message, the strength of arguments in the message, and the recency of the message. In the process of oscillation with damping, the direction of belief change alternates repeatedly, and the amount of belief change in each direction decreases as the belief approaches equilibrium. The model also predicts that average amplitudes of belief trajectories are a positive function of the force created by the message.
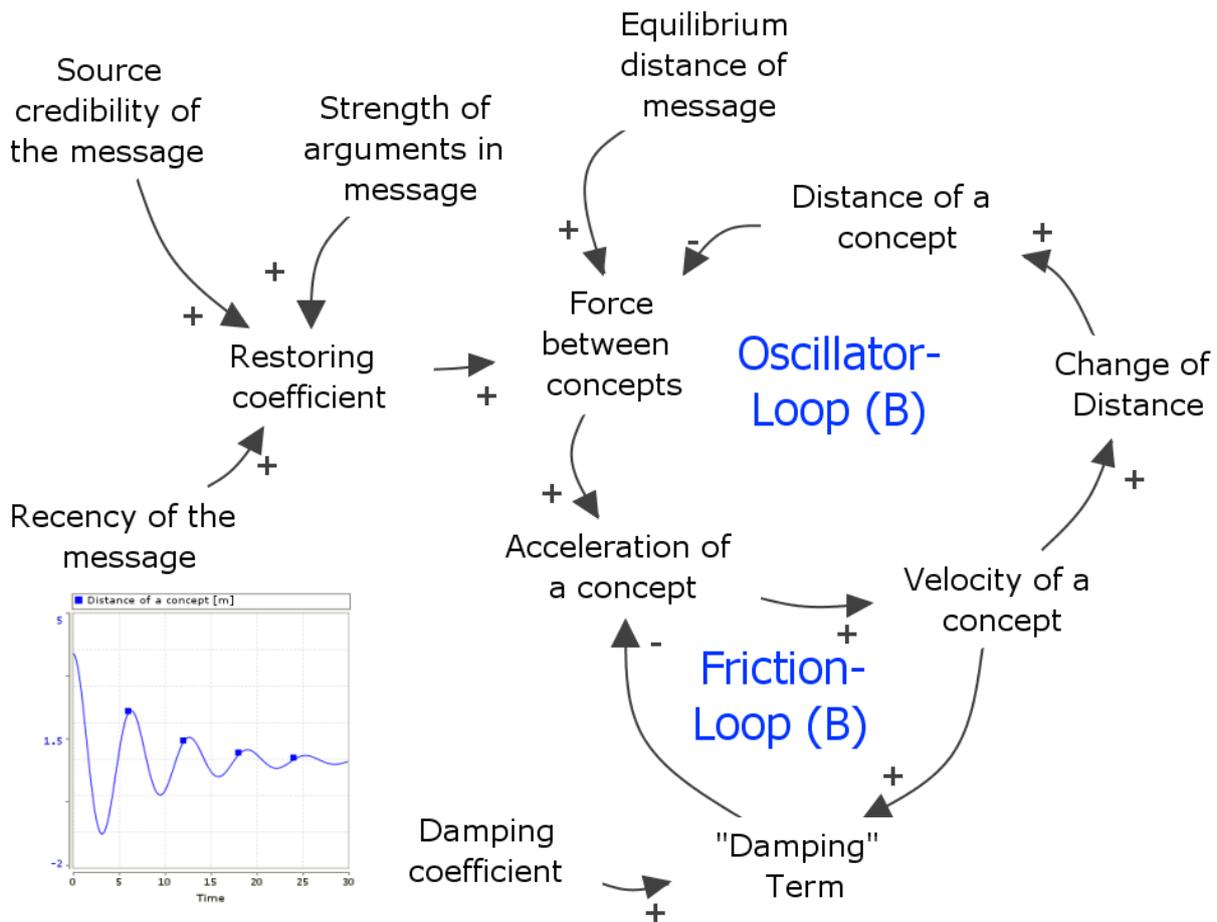

Figure: A Spatial-Spring Model of Cognitive Forces and the Damped Oscillating Behaviour

The force of the message is a function of the difference between the message position and the recipient's initial position (message discrepancy) and the restoring coefficient. Therefore, the amplitude of belief trajectories increases as message discrepancy increases. Restoring coefficients are assumed to be functions of source credibility, the strength of the message, and the strength of initial attitudes. Therefore, the more credible a source is, the greater the amplitude of the belief trajectory. Frequency of oscillation is predicted to be a function of the restoring coefficients. The model predicts that higher frequency oscillations should occur with messages from more credible sources, with stronger arguments, and on topics on which the recipient has a stronger initial view. The patterns of belief change predicted by the oscillation model can be best observed with trajectories of individual belief change during judgment rather than with cross-sectional data.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Based on:

- Sungeun Chung, The Cognitive Dynamics of Beliefs: The Role of Discrepancy, Credibility, and Involvement on Microprocesses of Judgment, Dissertation, University of Maryland (2004).

- Edward L. Fink, Stan A. Kaplowitz, and Susan McGreevy Hubbard, Oscillations in Beliefs and Decissions, in James Price Dillard and Michael Pfau (eds.), The Persuasion Handbook: Developments in Theory and Practice, Sage, London (2002).

Influence Model "Insurgency Media Manipulation"

As a scenario-related example the following influence diagram is a resume of an article in the Armed Forces Journal in 2008 about how insurgents in Afghanistan have mastered media manipulation.


Figure: Taliban's Media Strategy

In a series of incidents in 2007 the Taliban accused the coalition of killing civilians — claims that were widely reported by Afghan and international news media.

Taliban invented some of these incidents and exaggerated others in order to influence local and national government officials in Afghanistan, as well as local and international news media. Unless the coalition finds ways to counter it, the Taliban's propaganda campaign might "potentially drive a wedge between coalition forces and the Afghan government that will likely result in more investigations and crippling operational restraints".

According to special operations and conventional officers who have served in Afghanistan recently, the civilian casualty issue is part of a larger problem: the fact that the Taliban routinely outperforms the coalition in the contest to dominate public

perception of the war in Afghanistan. The International Security Assistance Force took great care to minimise the risk of killing civilians, but it does not take the threat of the Taliban making false accusations.

Because the Taliban's claims are spread by news media in Afghanistan, Europe and the U.S., the insurgents' information campaign succeeds at the tactical and strategic levels. It is eroding the will to sustain international support, and then it is eroding the [Afghan] government and the support of the [Afghan] people.

The special ops intelligence report, released in August and titled "Taliban Strategy: Capitalise on Perceived Civilian Casualties," says that while the Taliban has a long history of putting out false propaganda about civilian casualties, in 2007 "their strategy to capitalise on the media frenzy surrounding collateral damage has grown more organised and focused".

The Taliban has refined its approach over the past several years. No longer content with creating the perception among their target audiences that the coalition is killing civilians, the insurgents are now trying to create "media events" by deliberately placing civilians in the line of fire.

It is common for Taliban fighters to fight from compounds occupied by civilians — sometimes tying the hands of the occupants — in an attempt to create civilian casualties. On other occasions, the insurgents use women and children to re-supply them on the battlefield. The Taliban's tendency to plan combat episodes as "media events" provides an advantage.

But the Army general with recent Afghanistan experience said the coalition would never achieve complete victory over the Taliban so long as the insurgents enjoyed "sanctuary" in Pakistan. There was absolutely no pressure on this enemy in this sanctuary. What coalition has to do is disrupt Taliban's sanctuary while it simultaneously increases force levels and [reduce] their tactical ability to conduct intimidation of the Afghan population.

While the movement of people and materiel across the Pakistan border is critical to the Taliban's ability to intimidate rural Afghans and attack coalition forces, the migration of propaganda methods from Iraq may be just as important to their dominance of the information operations realm.

Based on:

- Sean D. Naylor, Insurgents in Afghanistan have mastered media manipulation, AFJ Armed Forces Journal, http://www.afji.com/2008/04/3489740/.

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Annex D   Guiding   Questions   for   Analysing   the Information Environment[94]

ACTORS

- Who are the actors affecting/exploiting the information environment to shape the situation?
- How do the actors see themselves and other actors? How do the actors want to be seen?
- How do actors see the International Community and the coalition and its (potential) engagement?
- How do actors see themselves being perceived by the international community and other actors?
- What are the actors' intent, means and capabilities to affect/shape/exploit the information environment?
- What are the coalition capabilities (including constraints and restraints) to affect/shape/exploit the information environment?
- What are other actors' 'information strategies' or similar plans?
- What activities conducted by what actors are currently affecting the information environment?
- Which attitudes, opinions and motivations are linked to specific actors? On the other hand, which attitudes, opinions and motivations are common?
- Which are the key cultural factors that characterise actors?

RELEVANT ISSUES

- What are issues of main concern for relevant actors? Which issues "touch" the actors?
- How and to what extent are the actors informed about these issues? Why?
- What are the local perceptions on the situation? How do the actors perceive these issues? What are the actors' opinions on these issues? Why do the actors have these opinions?
- What are the consequences related to the actors' perceptions/opinions on these issues?
- What is the relevance of these consequences to the situation?
- What are issues to be avoided (taboos)? Why?
- Are there issues which are particularly linked to specific media?
- To what extent are rumours relevant to public opinion?

ACCESS TO INFORMATION

- Is access to information limited to relevant actors? Are there media that can only reach specific actors or groups of actors? Are there cultural origins to this situation?

---

[94]   From Appendix 1 to Annex A in [MNIOE 2008].

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

- ☐What are the consequences relevant to the crisis?
- What role does access to information play in this scenario?
- Which media are continuously accessible? Are there temporal, infrastructural, cultural or other kinds of limitations or regulations?

MEDIA LANDSCAPE / INFORMATION / COMMUNICATION

- What is the role of the media? Are there public and private media? To what degree are the media free/restricted/censored? Are there cultural origins to this situation?
- What are the main sources of information for the actors?
- What are the actors' main ways, means/assets to access information?
- What are the actors' main ways, means/assets to communicate?
- To what degree do actors trust which sources of information?
- What kind of media/assets is used in the society? Which are the main ones and which are rarely or not used at all?
- Which media are used for which reasons?
- Who are the relevant actors in the media landscape?
- To what degree do the actors trust what media? Why?
- What are the contents broadcasted/distributed? What is the granularity and focus of the media representation of local, regional and international actors, issues and related situations? Are there issues that are limited to certain regions?
- Do official authorities give public statements? On what issues? What is the purpose?
- To what extent are international media able to penetrate cultural and religious information? Are international media able to overcome cultural/religious boundaries?
- How robust/redundant are the means, capabilities to access information and communicate? How to influence/deter the communication means?
- What kind of information / communication infrastructure is in place?
- What is the infrastructure (including supply) critical to the media, information and communication system?
- What kind of command and control system is used by the actors? What is the philosophy behind this system? What are the (technical and human) means?
- What kind of equipment is used? Examples: Commercial/military? From foreign countries/own development?
- How is the electromagnetic spectrum used? By which means?

INFORMATION FLOW / OPINION-BUILDING / DECISION-MAKING PROCESSES

- How do the opinion-building processes / decision-making processes of actors work? How are these processes structured? What are related key actors and functions? What are the cultural specifics of these processes?
- How and to what extent do the media reflect public opinion?

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

- How do the information flow processes between and among actors work? On what information flow processes are the opinion-building processes / decision-making processes based?
- How does the perception of actors by other actors influence their opinion-building processes / decision-making processes? Example: Is a positive image in the international media of importance for specific actors?
- What kind of information activities have to be considered to influence the opinion-building processes / decision-making processes?
- What activities / capabilities are in place to protect the information flow processes / opinion-building processes / decision-making processes? What are their respective vulnerabilities?
- What is the specific role of religion / culture in the region? What is the religious / cultural impact on the information flow processes / opinion-building processes / decision-making processes?
- What are the main constraints and restraints regarding religious and cultural taboos?
- What is the impact of rumours on information flow processes / opinion-building processes / decision-making processes? Which kind of rumours can easily be spread and which rumours are difficult to disseminate? To what extent can certain rumours influence, e.g., promote or halt, other rumours?
- What are the main sources of rumours? What actors spread and use rumours? For what purposes?
- What kind of information or news has the ability/chance to activate certain actors? What reaction towards different types of rumour can one expect from certain actors?
- Are there cultural/religious events and processes that enable certain information flows? What kind of knowledge is being transferred by traditional or indigenous methods (e.g., initiation ceremony)? What are these methods?
- What is the impact of regional or cultural connatural media on the information flow / opinion building / decision making processes?

FREEDOM OF EXPRESSION

- To what extent is freedom of expression guaranteed by constitution?
- To what extent and how is freedom of expression restricted in practice?
- Are there cultural origins to this situation?
- To what degree is actors' freedom of expression relevant to the crisis?
- How does the cultural/religious background shape the understanding of the concept of freedom of expression?

ENVIRONMENTAL ISSUES

- What languages and dialects are used in the region?
- How are these languages/dialects distributed in the region

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

- Is there a common language? Which local languages and dialects are reflected in media?
- What is the level of literacy and education – define regional flavours?
- What is the main method/tradition of communication (oral, text or visual) – are there regional variations?
- What are the primary means of transport and distribution? What is the degree of mobility of the local population?
- Are there any seasonal weather patterns that hamper communication?
- Are there any geographical issues hampering communication?
- Are there impenetrable areas (jungle/mountains etc)? Do they hamper communication?
- What is the normal basic diet and need for services?
- What is the accessibility to children's care and education?
- Is the population self-sufficient?
- How are basic life-support measures provided?
- Who is providing security to whom? What are the agendas of the various security providers? What is the local perception of the security situation?
- Is there any potential of natural and/or technological hazard in the region?

RISKS AND CONCERNS

- What are risks and concerns regarding a (potential) coalition engagement – e.g., perception of the engagement, development of the situation in the information environment?
- How may the situation in the information environment evolve if the coalition acts / does not act in specific ways?
- Are there low-likelihood events that represent a high risk to coalition activity?
- What is the coalition's vulnerability to these risks?

BACKGROUND

- Did comparable crisis situations appear in the same region previously?
- What were the origins of these crisis situations? Who were the main actors relevant to the information environment then? Are there still existing main actors relevant to the information environment which may be used as point of contact/ "door openers"?
- What lessons were identified/learned regarding the role and relevance of the information environment in previous conflicts with respect to the situation, its assessment, solutions, and results?
- Was any possible coalition partner involved in a previous crisis in the region of concern? Could this involvement still have an (positive or negative) impact on the current crisis?
- What are the major changes since previous conflicts with regard to the information environment?

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

AREAS OF COMPARABLE CONDITIONS IN THE INFORMATION ENVIRONMENT / INTERRELATIONSHIPS OF AREAS

- Within and attached to the crisis region what are areas with the same or comparable conditions in the information environment and what areas differ from other areas?
- What are the main differences in these areas (actors, information systems, opinion-building / decision-making processes and media)?
- What are the interrelationships between these areas (main actors / key communicators, information systems, grade/hierarchy of the interdependency, concurring and/or opposing positions to the respective crisis)?
- What is the level of influence of the main actors / key communicators of these different areas to their respective area audiences?
- What are the critical vulnerabilities and critical requirements of these main actors / key communicators concerning the information environment?

UNCLASSIFIED FOR PUBLIC RELEASE

– Enhanced Systemic Understanding of the Information Environment in Complex Crisis Management –
Analytical Concept – Coordinated Draft Version 1.0 – 22 October 2010

Annex E   Existing   Assessment   Frameworks   and Approaches

See separate document