

## 4. LESSONS LEARNED AND CONFLICTS HISTORY

# HOW IS PEACE-BUILDING IMPLEMENTED MOST EFFECTIVELY?

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### ABSTRACT

The study in 2010 indicated that majority of armed conflicts that occurred in the first decade of 21st century have been recurrences, because deep-rooted causes of conflict have not been properly addressed (Sandole, 2010, p. 35). Afghanistan and the Democratic Republic of Congo are examples of peace-building failures. Even with the cease-fire among parties in place or diplomatic solution to the conflict, the violence often continues regardless of all the peace-building efforts. As the peace-building strategies fail so often, many questions may arise: What have we done wrong? How was it possible that the largest and most expensive peace operations failed to put to an end some of the bloodiest conflicts of the post-Cold war era? Is the problem due to the misunderstanding and incapacity of peacebuilders to adequately address the roots of violence, or it is ignorance and neglect of local conflict dynamics? In other words, is there something in relation to conflict background, local society structure, or local culture, cultural norms and dynamics that peacebuilders should consider and rethink?

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## Introduction

The core doctrine for United Nations peacekeeping operations – ‘United Nations Peacekeeping Operations Principles and Guidelines’ (also known as ‘Capstone Doctrine’) – defines peace-building as ‘a range of measures targeted to reduce the risk of lapsing or relapsing into conflict by strengthening national capacities at all levels for conflict management, and to lay the foundation for sustainable peace and de-

velopment’ (UN, 2008, p. 18). The main idea behind this definition is that peace-building processes should address deep-rooted causes of conflict in a comprehensive way (Ibid). However, peace-building reality is far from this ideal. The former UN Secretary-General Kofi Annan, as summarized by Autesserre (2010), noted that ‘countries that emerge from war lapse back into violence within five years’ (Autesserre, 2010, p. 5).

The study conducted in 2010 indicated that majority of armed conflicts that occurred in the first decade of 21<sup>st</sup> century have been recurrences, because deep-rooted causes of conflict have not been properly addressed (Sandole, 2010, p. 35). Currently, Afghanistan and the Democratic Republic of Congo are clear examples of peace-building failures (Jenkins, 2013, p. 1). Even with the cease-fire among parties in place or diplomatic solution to the conflict, the violence often continues regardless of all the peace-building efforts. As the peace-building strategies fail so often, many questions may arise: What have we done wrong? How was it possible that the largest and most expensive peace operations failed to put to an end some of the bloodiest conflicts of the post-Cold war era? Is the problem due to the misunderstanding and incapacity of peacebuilders to adequately address the roots of violence, or it is ignorance and neglect of local conflict dynamics? In other words, is there something in relation to conflict background, local society structure, or local culture, cultural norms and dynamics that peacebuilders should consider and rethink? I would argue that the missing link in the peacebuilders' approach to problems is cultural awareness.

Culture can be defined as a set of traditions, beliefs, and behaviours, which are common to a certain group. Cultural awareness is therefore knowledge of a particular culture and ability to recognize and understand the effects of culture – to know what one can encounter while interacting with the people from particular culture (Wunderle, 2006, p. 9).

Peacebuilders need knowledge of local culture, in order to understand main cultural factors (such as religion, ethnicity, heritage, social structures, norms and traditions) and how they influence behaviours, decision-making and actions of different

local actors in the peace-building process. That knowledge will enable them to understand how local culture can affect the peace-building efforts. Finally, they will be able to understand and properly address root causes of conflict, which is the core premise of peace-building.

This essay will assert that peace-building can be implemented more effectively if cultural awareness is considered more seriously during planning and execution of peace-building operations, however, we should avoid the tendency to overestimate it or see cultural factors as obstacles. My first argument is that raising cultural awareness could significantly contribute to the success of peace-building process because it helps in understanding and addressing root causes of conflict, enhances operational effectiveness, situational awareness, safety and securities of own forces, and ultimately fosters the image and credibility of the mission. My second argument is that in order to achieve this, mission personnel must complete adequate pre-deployment training with regards to mission-specific cultural factors so they reach a proper level of cultural awareness.

The first part of the essay will address the question 'Why culture matters?' by analysing the importance of culture and cultural awareness (from a historical and operational perspective) and explaining the connection between cultural factors and success of peace-building. The second part will highlight some key characteristics of peace-building and observe how peace-building is implemented more effectively if cultural factors are thoughtfully considered during planning and execution of peace-building operations. The third part will identify current gaps in cultural awareness training and some recommendations regarding cultural awareness training and education which is essential for implementation of

a cultural perspective into peace-building operations. In this part I will also propose a model for developing cultural awareness at different levels. The second and third part of the essay will similarly address some critics of incorporating a cultural dimension into military and peace-building operations, such as that we should not overestimate the importance of culture and that 'Culture does not eat strategy for breakfast' (Bergman, 2013). The essay will focus on the importance of understanding local culture in peace-building; the other aspect (understanding different cultures within multinational organizations and missions) will be briefly mentioned.

### Why culture matters?

Throughout history, cultural factors have always influenced the conduct of military operations. In some parts of the world, such as Africa and the Middle East, cultural factors even played critical roles for the success of military operations (Wunderle, 2006, p. 2). Experience from recent and ongoing peace operations, which were either population-centric (with the aim to support the local population, such as operation ISAF1 in Afghanistan) or with mandate to protect civilians (like most of ongoing United Nations multidimensional peacekeeping operations), showed that the role of culture became even more important. However, roles of culture and cultural awareness have often been ignored and unrecognized, and lessons learned from interactions with different cultures have often been unexamined and unexploited. If we are looking for why culture matters, we just have to learn from history.

More than two thousand years ago, the Romans learned why culture matters. Facing a series of rebellions whilst lacking the manpower and resources to

maintain peace in all parts of the Empire, they have developed a complex four-pillar strategy which encompassed military, political, economic and cultural instruments. Military actions were represented by direct suppression of rebellion while political and economic actions aimed to make the provinces dependant on Rome. The cultural method, however, became the main method in maintaining peace and stability after the rebellion was suppressed. This method functioned through two main lines of effort. One was development of these provinces so they become equal with other parts of the Empire in terms of economy, urbanization and judiciary. Second line of effort was that soldiers stationed in the provinces acted as 'cultural agents' – they represented the Rome and spread Roman culture and values (Tovy, 2012, pp. 3-8). From this example one is likely to conclude that long ago it was clear that in order to maintain peace and security in long terms it was necessary to consider culture as much as security, economy, development, and other issues. Still, more than two thousand years after the development of this strategy, military commanders and forces under their command continue with same mistakes because they do not properly consider cultural awareness during planning and execution of military operations. Wunderle (2006) provides example of what can happen when military actions do not properly address cultural awareness:

*A lack of cultural awareness among American forces has led to an increase in animosity among many Iraqis and contributed to a negative image of the US military. [...] Soldiers have also shown ignorance of Islamic religious practice. For example, Iraqis arrested by US troops have had their heads forced to the ground, a position forbidden by Islam except during prayers. This action*

<sup>1</sup> ISAF - International Security Assistance Force.

*offends detainees as well as bystanders. [...] The military has enough to worry about without alienating the local population.* (Wunderle, 2006, p. 2).

With the emergence of peacekeeping and later complex multidimensional peace-building missions, culture continued to play a vital role in maintaining peace and security in the long run. First peacekeeping operations, whose main task was to maintain ceasefire and separate the parties in conflict (a traditional peacekeeping tasks), deployed to the areas where different cultures, ethnicities and religions collided over centuries. While providing a temporary settlement of the conflict, those traditional peacekeeping missions have never really addressed the root causes of conflict. Failure of early United Nations peacekeeping missions in 1990s (Somalia, Rwanda, and Bosnia) had shown that in order to maintain peace and security in the long run it was not enough just to maintain a ceasefire and separation of parties. Due to the changed essence of armed conflict and more actors involved, it became clear that peace operations should execute complex, multidimensional mandates. Those mandates include a widespread assistance to the war-torn countries, with long-term peace-building tasks such as Disarmament, Demobilization, and Reintegration (DDR), Security Sector Reform (SSR), support to political process and elections, development, and re-building government institutions (UN, 2009, p. 40). In order to fulfil such mandate, peace-builders have to address and eliminate root causes of conflict in a comprehensive and effective way while maintaining situational awareness, safety and security of own forces, and image and credibility of mission. This cannot be completed without sufficient knowledge of local culture and level of cultural awareness which will suit to

peace-building tasks. Since we already defined culture as a set of traditions, beliefs, and behaviours, which are common to a certain group (as explained in the introduction), then it can be also understood as a shared knowledge and a framework which guides the lives of people on an everyday basis. This framework determines how people see the world, social values, norms, traditions, social structures, and rules for interacting with other people – including the way how individuals see the conflict and how they engage in it (Piotrowska, 2015, p. 13).

Since ancient times it had been clear that knowing the adversary is just one of critical preconditions for success of military operations. In today's peace-building, cultural awareness plays the same important role as knowing potential adversaries or spoilers in the peace process. In order to succeed in their tasks, peace-builders must achieve a proper level of cultural awareness. This can only be achieved through adequate training and education prior to deployment, but also through learning and adapting during interaction with local culture. With that knowledge peacebuilders will be able to understand and properly address root causes of conflict such as ethnic and religious rivalries and animosities; they will recognize the needs of local population; they will understand traditional local structures and will be able to address the right actor in any situation; they will understand how and why different actors think and act; and, they will know what to expect from and how to influence the behaviour of different local actors in the peace-building process. Finally, they will be able to show respect to the local culture and cultural diversities, because respect for diversities and cultural differences is one of the key values of peace operations (UN, 2009, p. 352). The following part will explain in

a more detailed way how cultural awareness could significantly contribute to the success of peace-building process.

## How is peace-building implemented more effectively if cultural factors are thoughtfully considered?

The first argument has already delineated that raising cultural awareness could significantly contribute to the success of peace-building process because it helps in addressing root causes of conflict, enhances operational effectiveness, situational awareness, safety and securities of own forces, and ultimately fosters the image and credibility of mission. Before proceeding with this argumentation it is necessary to highlight some key characteristics of peace-building. Many authors understand peace-building as external intervention 'intended to reduce the risk that a state will erupt into or return to war' (Jenkins, 2013, p. 30). In other words, peace-building is planned and conducted by foreign actors – those who are usually not familiar with local culture and its dynamics. Foreign peacebuilders have their own education from different educational systems and their own set of beliefs, definitions, assumptions, roles, norms, and procedures – a kind of 'peace-building culture' – which shape their intervention strategy and actions on the ground (Autesserre, 2010, p. 10). However, while they succeed in providing conflict resolution at the political and diplomatic level, they often fail to understand why the violence persists at the local level. Failure to understand this ultimately undermines all the peace-building effort. From this perspective, it can be argued that one of the reasons for such ineffectiveness of peace-building is misunderstanding or lack of knowledge in local culture, societal

structures, local conflict dynamics (traditional behaviours and violence at the local level), and local actors in the peace-building process.

Peacebuilding involves a wide range of instruments, including diplomatic, economic, social, judicial, military, and so forth. In complex multidimensional peace operations, such as those with peacebuilding mandates and tasks, the military is just one of the mission's components – but the one with substantial armed capacity to enforce the mandate and with the authority to use force. In peacebuilding operations, the main role of the military is to provide a safe and secure environment so that other actors (civilian component, UN police, humanitarian and other agencies) can conduct their tasks. In order to achieve this, the military must maintain 'foot on the ground' and proper situational awareness, which means that troops must be familiar with local conflicts and dynamics and be prepared to adequately respond to any situation.

If peace-building planners prior to mission planning develop proper knowledge of the conflict background and the main aspects of local culture (especially behaviours and actions of local actors influenced by the culture), they will have a better situational awareness necessary for the initial planning stage. That knowledge will enable them to do a proper mission analysis before they develop feasible courses of action, procedures and contingency plans for different emergencies and to conduct a proper allocation of resources for each peace-building task.

Cultural awareness is equally important during initial stage of deployment: with sufficient knowledge and understanding of local cultural factors and their effects, peacebuilders can adapt more easily to the new environment and avoid confusion, cultural

shock and frustration. Once they are deployed to the mission area, peacebuilders with sufficient levels of cultural awareness will have better knowledge of behaviour, decision-making and actions of different local actors in the peace process. By constantly analysing cultural factors and their influences on local actors, peacebuilders will improve their situational awareness. Better situational awareness will reduce uncertainty during operations and provide conditions for better planning and implementation of safety and security measures of own forces. All these preconditions will in return enhance operational effectiveness, and that will secure a better image and credibility of the mission because peacebuilders will be perceived by the local population in a positive way. Finally, it will provide peacebuilders with a better opportunity to access the whole population and encourage potential spoilers and unwilling groups to participate in the peace process. Access to the whole population is a necessary precondition if one aims to address root causes of conflict.

Another precondition for successful peace-building is to understand the needs of the local population. Here I will argue that the needs of the local population are directly linked to the culture, therefore understanding those needs requires a sufficient level of cultural awareness. With that kind of knowledge and understanding of local culture, peacebuilders will be able to better understand heritage, local traditions, interests, behaviours, problems and needs of certain local groups and actors and to address them properly. Sanguma (2012) argues that deep-rooted conflicts arise when people see that their needs, such as security and identity, are threatened (Sanguma, 2012, p. 19). Identity, or sense of belonging to some group, is directly linked to the culture, because it is shaped by different

cultural factors such as religion, ethnicity, history, and social norms. Likewise, there is the direct link between security and culture. A sense of security is cultural-driven: in some cultures, individuals find their security within different social frameworks (family, village, tribe, clan, or wider community), while some cultures are more individualistic. Identity and security are therefore sensitive issues, so they have to be carefully considered during the planning and execution of peace-building missions because many peace-building activities are focused on interaction with local populations. From this perspective, one is likely to conclude that understanding local culture – how people think and act within a particular cultural framework – means the ability to recognize the needs of the local population and to respond with appropriate actions on the ground. With proper level of cultural awareness, peacebuilders will be able to avoid serious operational mistakes – the most dangerous occur when peacebuilders with their actions enhance the activities of spoilers in the peace process (rebels, criminals, or corrupted officials) or even create new adversaries. Clear examples of such peace-building failures can be found in DR Congo and Afghanistan.

The first peacebuilders' failure in Congo was that they arrived completely unprepared and without any understanding of the local culture. Second, they failed to understand that the root causes of conflict lie in ethnic and historical hatred between two certain groups and that disarmament, demobilization and reintegration of former combatants is not the mission's main problem (Autesserre, 2010, p. 7). Third and most important reason was that they didn't understand the needs of the local population within a particular cultural framework and with their actions on the ground only made the situation worse. Instead of providing

security first (because situation demanded such action) they started to provide different goods for the local people which only attracted the rebels and enhanced their activities such as looting and random killing for goods (Vogel & Musamba, 2016, p. 3). After one patrol in Afghanistan reacted disrespectfully towards the local people, General Stanley McChrystal, former ISAF commander, observed that situation with the words: 'How many insurgents did the patrol make that day?' (ISAF, 2009, p. 1). He perfectly understood that local people – the 'human terrain' – are the centre of gravity in this operation, and that winning hearts and minds is the key to success. Without cultural awareness that becomes mission impossible. Therefore, the good lessons learned from Congo and Afghanistan should be as follows: know and understand the local culture and local conflict dynamics; understand how the security and needs of the local population are linked to a particular cultural context; know the spoilers in the peace process and be able to anticipate their actions within a particular cultural context; and finally, act accordingly on the ground and try not to create new problems and adversaries. All these challenges should be properly addressed during cultural awareness pre-deployment training.

However, in our analysis we should avoid two mistakes – the tendencies to overestimate the importance of cultural awareness and to see cultural factors as obstacles. Cultural awareness should be understood as one of the tools in achieving mission success. It is necessary for the success of peace-building, but if peacebuilders see every cultural factor or influence as an obstacle, that can seriously undermine their line of reasoning, make them risk averse, influence mission planning, and disable many actions on the ground because they will tend to minimize all interactions with lo-

cal people. Instead, they should carefully consider cultural awareness during planning and execution of all activities, take advantage of cultural knowledge, and finally – instead of seeing obstacles everywhere – to try to create bridges to the local people and therefore enhance chances for mission success.

## Cultural awareness training: challenges and recommendations

In order to achieve a proper level of cultural awareness, mission personnel must complete adequate pre-deployment training with regards to mission-specific cultural factors. The level of training will depend on one's role and position in the mission hierarchy.

Current military and civilian training for peace-building missions do not pay much attention to the cultural awareness training. Even in the UN system, where the concept of peace-building was born, the approach to cultural awareness training is very simplistic. For example, Core Pre-deployment Training Materials (CPTMs) for UN peace-keeping operations in unit titled 'Respect for Diversity' (2009) observe only cultural differences and highlight the danger of stereotypes and prejudices (UN, 2009, pp. 362-370). However, for military and civilian personnel who will execute future complex peace-building tasks it is not just enough to know that people eat different food, have different working habits, use different gestures, and so forth. The other example can be found in NATO Comprehensive Operations Planning Directive (2013), which only mentions culture as something to be considered when assessing each actor's motivations (SHAPE, 2013, p. 83). As we can see, cultural awareness is merely present in training documents and guidelines, while many countries do not conduct cultural

awareness training at all. For instance, very high importance has been given to gender training, while there is still no such initiative with regards to cultural awareness training.

As asserted before, peacebuilders need an insight into target culture in order to acquire knowledge and understanding of how that culture will affect the peace-building efforts. Apparently, there is a need for improvement in current cultural awareness training and education. The problem is twofold: it is necessary to change the approach to the cultural awareness training as well as to its content. The following section will propose a model for cultural awareness training and education.

Basic cultural awareness training for all future military and civilian peace-building personnel should provide basic information on why it is important to study culture and which cultural factors and influences can affect peace-building efforts on the ground. Secondly, prior to deployment to the mission area all personnel should complete mission-specific pre-deployment training which should adequately address important issues such as history, conflict background, important actors, traditional social structures, main aspects of religion, and local dynamics (those main aspects of local culture that can influence peace-building day-to-day activities in their respective area of responsibility). Mission specific training can also include useful phrases in the local language and cultural niceties such as greetings and how to behave when conducting meetings with local authorities. On this level of cultural awareness training it has to be already clear that situational awareness must be maintained at all levels and that everyone needs to know which indicators to monitor with respect to local dynamics. The third level of cultural awareness training should be for those who will hold leading positions in peace-building activities, such

as commanders of military and police units and heads of civilian branches. This level of cultural awareness training should provide deeper knowledge of the specific culture and understanding of how different aspects of culture influence behaviours, decision-making and actions of different local actors in the peace process. The highest level of cultural awareness training is required for those who will conduct operational level planning and decision-making. It should provide the deepest insight into the specific culture and understanding of motivations and intentions of those specific groups and actors who are critical to the success of peace-building process.

Since the pre-deployment training of military personnel is a national responsibility, troop contributing countries should incorporate cultural awareness training into their training doctrines and practices. They should accept the fact that cultural awareness is the key to success in those operations that depend on support from local population. Therefore cultural awareness should be considered as equal to other peace-building activities.

Another aspect of cultural awareness is worth mentioning here: cultural awareness is not only important for peace-building operations, but also for national defence and successful cooperation with allies in different coalitions. Contemporary military operations and those that involve non-military actors often bring people from different countries, cultures and educational systems to work together. Cultural awareness can help in better understanding of the allies' culture, make coalitions more effective, and enhance cooperation between different military and non-military actors.

The opposing view of the importance of cultural awareness is often expressed with the phrase 'Culture does not eat strategy for breakfast'. The critics of cultural aware-



ness argue that cultural factors matter but they will not significantly alter human nature and that people often tend to overestimate the importance of culture. This view is based on some societal theories which argue that most human behaviours are universal. In other words, cultural factors and cultural awareness should be considered, but they will not fundamentally change strategy or actions on the ground: not understanding culture can cause some problems, but not to the extent as a lack of professional skills or resources to conduct main tasks (Bergman, 2013, p. 9). Nonetheless, common to both views is this central question: how we can best prepare for future peace-building operations? The answer is that training and education is the key to its achievement. The compromise between these two opposite views could be that cultural awareness matters and it has to be part of training and education, but it should not be overestimated.

## Conclusion

Cultural awareness is one of the preconditions for the success of peace-building operations. Experience from recent and ongoing peace-building operations has shown that cultural awareness becomes even more important when the mission is to win hearts and minds or to protect the people. Cultural factors must be carefully considered during planning and execution of peace-building operations. Knowledge of local culture and how it influences behaviours, decision-making and actions of different local actors can significantly contribute to the success of peace-building efforts. If properly developed, it could help in understanding and addressing root causes of conflict. Cultural awareness enhances operational effectiveness, situational awareness, safety and security of own forces, and raises the image and credibility of mission. It can be properly developed only

through adequate pre-deployment training and education, so it has to be incorporated into training doctrine and practices of nations which contribute with peace-building personnel. Training and education should be suitable to peace-building tasks for a particular mission and to different roles and positions of personnel involved. This problem is twofold: training and education can be tailored and conducted effectively only if cultural awareness is adequately approached and if training contents are suitable to peace-building tasks. In order to achieve this, a proper mind-set for understanding culture is required. First, there is no good or bad culture: cultures are just different and we have to accept that fact. Secondly, knowledge and respect of local culture is the key to mission success: the worst mistake that peacebuilders can make is to create new adversaries and spoilers to the peace process. Thirdly, failure to understand local culture and its influences can lead to uncertainty, confusion, and even a mission failure. Finally, it is important to understand that effects of culture should neither be overestimated, nor should culture be seen as an obstacle. Instead, peacebuilders should raise their cultural awareness and use it as an opportunity to build bridges to all local actors, involve them in the peace-building process and therefore secure success of the mission.

## References

- Autesserre, S., 2010. *The Trouble with the Congo: Local Violence and the Failure of International Peacebuilding*. New York: Cambridge University Press.
- Bergman, D.M., 2013. *The Myths of Cultural Awareness: Culture Does Not Eat Strategy for Breakfast*. *Australian Army Journal*, X(3), pp. 128-141.
- ISAF, 2009. *ISAF Commander's Counterinsurgency Guidance*. Kabul: HQ ISAF.

- Jenkins, R., 2013. *Peacebuilding: From concept to commission*. London: Routledge.
- Piotrowska, D., 2015. *The City College of New York Master Theses: The Value of Culture in Peacebuilding – Examples from Democratic Republic of Congo, Yemen and Nepal*. [Online] Available at: [http://academicworks.cuny.edu/cc\\_etds\\_theses/360/](http://academicworks.cuny.edu/cc_etds_theses/360/) [accessed: 15 March 2017].
- Sandole, J.D., 2010. *Peacebuilding: War and Conflict in the Modern World*. 1<sup>st</sup> ed. Cambridge: Polity Press.
- Sanguma, W., 2012. *Re-evaluating Peacebuilding in the Democratic Republic of Congo: A case study in Dongo* (Master Theses). [Online] Available at: <http://repository.usfca.edu/cgi/viewcontent.cgi?article=1057&context=thes> [accessed: 21 March 2017].
- SHAPE, 2013. *Allied Command Operations Comprehensive Operations Planning Directive*, Mons: NATO.
- Tovy, T., 2012. *They Make a Solitude and Call it Peace: Counterinsurgency – The Roman Model*. [Online] Available at: [smallwarsjournal.com/printpdf/13597](http://smallwarsjournal.com/printpdf/13597) [accessed: 27 December 2016].
- UN, 2008. *United Nations Peacekeeping Operations Principles and Guidelines*. [Online] Available at: [http://www.un.org/en/peacekeeping/documents/capstone\\_eng.pdf](http://www.un.org/en/peacekeeping/documents/capstone_eng.pdf) [accessed: 10 January 2017].
- UN, 2009. *UN Peacekeeping PDT Standards, Core PreDeployment Training Materials*, 1<sup>st</sup> ed. (2009). [Online] Available at: [http://repository.un.org/bitstream/handle/11176/89573/CPTM\\_All.pdf?sequence=1&isAllowed=y](http://repository.un.org/bitstream/handle/11176/89573/CPTM_All.pdf?sequence=1&isAllowed=y) [accessed: 3 February 2017].
- Vogel, C. & Musamba, J., 2016. *Recycling Rebels? Demobilization in the Congo*. [Online] Available at: <http://riftvalley.net/publication/recycling-rebels-demobilization-congo#.WJDTK388XWE> [accessed: 31 January 2017].
- Wunderle, W.D., 2006. *Through the Lens of Cultural Awareness: A Primer for US Armed Forces Deploying to Arab and Middle Eastern Countries*. [Online] Available at: <http://usacac.army.mil/cac2/cgsc/carl/download/csipubs/wunderle.pdf> [accessed: 10 April 2017].