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CREATIVITY IN THE MILITARY PLANNING PROCESS

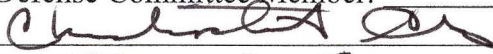
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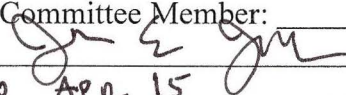
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## **Executive Summary**

**Title:** Creativity in the Military Planning Process

**Author:** Major Eric Piwek, Royal Netherlands Marine Corps

**Thesis:** The Marine Corps Planning Process (MCP), with its numerous prescribed subroutines, is a very mechanical problem-solving process that inhibits creative thinking. Moreover, top-down planning, one of the tenets of the MCP, might unintentionally undermine creative thinking. Therefore it is important that commanders and planners have a good understanding of the creativity process.

**Discussion:** The future security environment will be uncertain and complex. Marines will encounter an environment in which “wicked” problems reign. “A strong grasp of history, critical thinking, and an appreciation of doctrine are keys to succeeding in this environment, but are insufficient on their own.”<sup>1</sup> Doctrinal publications emphasize that success also depends on the creativity of commanders and planners. Although these publications stress the importance of creativity, they do not elucidate how to encourage creativity or how to let creativity flourish during military planning. As a matter of fact, it seems that commanders and planners are constrained in their creativity when executing rigid military planning processes (i.e. MCP). This study examines the strengths and weaknesses of the military planning process and the role of the commander with regards to creative thinking.

**Conclusion:** The comparison between the MCP and several “creativity processes” that originate from vast literature of individual and sociocultural creativity studies, reveals that the MCP inherently constrains the generation of creative ideas, especially when commanders and planners face a wicked problem. The MCP, as described in MCWP 5-1, is basically a very rigid, mechanical problem-solving process. Commander and planners should be aware of the flaws of the MCP and adopt several counter-intuitive attitudes to let creativity flourish.

## **DISCLAIMER**

THE OPINIONS AND CONCLUSIONS EXPRESSED HEREIN ARE THOSE OF THE INDIVIDUAL STUDENT AUTHOR AND DO NOT NECESSARILY REPRESENT THE VIEWS OF EITHER THE MARINE CORPS COMMAND AND STAFF COLLEGE OR ANY OTHER GOVERNMENTAL AGENCY. REFERENCES TO THIS STUDY SHOULD INCLUDE THE FOREGOING STATEMENT.

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## Preface

Creativity fascinates politicians, scholars, educators, business leaders, and people around the world, simply because if there is no creativity, there are no new ideas. Moreover, if there are no new ideas, there is no progress, no development and enrichment of our lives. Many states have transformed their economies into creative knowledge economies. These economies focus on the production of ideas rather than producing things. In this manner they warrant their competitiveness in an increasingly globalized market.

Creativity is of similar importance to the military. Doctrinal publications emphasize that “during times of peace, the most important task of any military is to prepare for [the next] war.”<sup>2</sup> In times of conflict, the military’s goal is to render the adversary impotent. Regardless of the character of the conflict, service members at all levels must think creatively to prevail. In his book *Military Adaptation in War*, Williamson Murray argues that the future American leaders cannot predict “where, against whom, or even when they will find themselves involved in major military operations.” He infers that, therefore, the U.S. military needs be able to adapt to the unforeseen in order to be effective.<sup>3</sup> In her book *No Man’s Land – Preparing for War and Peace in Post-9/11 America*, Elizabeth D. Samet, Professor of English at West Point, pleads for creativity and intellectual flexibility in the U.S. military, which is known for neither.<sup>4</sup> The Marine Corps University (MCU) recognized a similar need to develop military students’ creativity. For that reason, the MCU centered its Quality Enhancement Plan around two program goals: “(1) improve students’ creative problem-solving skills and (2) prepare civilian and military faculty successfully to create learning environments that enable creative problem solving.”<sup>5</sup>

This study focuses on creativity as it applies to commanders and planners when engaged in the military planning process. It explains the inherent strengths and weaknesses of the military planning process. The aim is to provide commanders and planners an understanding of the

potential flaws of the military planning process with regards to creative thinking. Hopefully this paper provokes food for creative thought in order to enhance military planning. For ease and clarity, this thesis utilizes the Marine Corps Planning Process (MCP) as a “default” problem-solving process. Even though MCP is a specific Marine Corps six-step planning process, other U.S. military planning processes are nearly identical, basically employing the same problem-solving methodology. Therefore, this paper is also applicable to other military planning processes.

Dr. Christopher S. Stowe was my mentor for this project. I want to thank him for his support, criticism, and insights. He kept me on track throughout the process. I also recognize the help I received from Andrea Hamlen and Stase Wells, my teammates in the battle with American-English grammar and the Chicago style. Furthermore, I want to thank the interviewees who provided many insights that helped me write the paper. But most importantly, I thank my wife, Mareze. Nothing is possible for me without her. Her support, patience, and love inspire me. During this year she made sure I could focus on the Command and Staff College curriculum. She endured the many hours I have spent in my study room, reading books and writing papers, including this Master of Military Studies thesis.



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# 1. Introduction

On October 29, 2014, Defense Secretary Chuck Hagel, in a speech at the Reagan National Defense Forum, said the U.S. military has to make a new push for fresh thinking and creative ideas. He announced the Defense Innovation Initiative to address the question of how the U.S. military can keep and extend its military superiority despite tighter budgets. He explained that the U.S. is entering an era where American dominance on the seas, in the skies, and in space – not to mention cyberspace – can no longer be taken for granted.<sup>6</sup> This initiative, primarily focused on keeping America’s commanding edge with regard to developing and fielding new technological systems, however, does not guarantee military success. The 13 years of experience in Afghanistan alone have shown that less technologically advanced adversaries can pose a serious challenge for modern militaries. Although the United States military should never neglect technological innovations, “success in the military domain...is hardly possible without considerable creativity on the part of the military institutions as a whole and the commanders and their staffs at all levels.”<sup>7</sup> It is not so strange, therefore, that military doctrine stresses the importance of creativity.<sup>8</sup> Yet, doctrinal publications do not explain how commanders and planners can encourage creative thinking during planning. The purpose of this study is to fill a portion of that gap. Therefore, it addresses the following primary research question:

“How can commanders and staffs better generate creative ideas during the military planning process?”
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## 1.1 Definition of creativity

Before further elaborating on promoting creativity during the military planning process, it is important to develop a baseline understanding of creativity. Postulating an exhaustive

definition for creativity, however, is a difficult task since creativity research is interdisciplinary. Each discipline has its own distinctive analytical focus, and as a result, each discipline defines creativity differently. In his book *Explaining Creativity*, Professor Keith Sawyer categorizes two major approaches to creativity research in order to explain it. The first approach, the individualist approach, focuses on the person who is engaged in creative thought or behavior. Sawyer defines creativity in this realm as “a new mental combination that is expressed in the world.” This definition entails three key aspects. Firstly, the creative thought must be *new*, or in other words, novel and original. Worth mentioning is that the individualist approach classifies a person as creative as long as the thought is novel to him or her. Psychologists call this “little c” creativity.<sup>9</sup> Secondly, creativity involves a *combination* of two or more thoughts of an individual, resulting in a new insight. In other words, the individualist definition is based on *associationism*, one of the oldest theories of psychology, which means that “new combinations grow out of elements already in the possession of the mind.”<sup>10</sup> Finally, creativity needs to be *expressed in the world*. This means that the individual has to convey his or her idea; otherwise, he or she is not creative.<sup>11</sup>

The second approach studies creative people working together. Sawyer calls this the sociocultural approach. This approach defines creativity as “the generation of a product that is judged to be novel and also appropriate, useful, or valuable by a suitably knowledgeable social group.” In contrast to the individualist approach, the group judges the novelty instead of the individual.<sup>12</sup> When the idea is novel and appropriate, useful, or valuable to the group, it will also be novel to each individual within that group.<sup>13</sup> The *systems model of creativity*, developed on the insights of numerous creativity studies in the 1980s and 1990s, conceptualizes the sociocultural definition.<sup>14</sup> The model, addressed in Appendix A, shows that creativity is a social construction constituted by the confluence of three elements: (a) the domain (shared conventions and knowledge in a particular *Zeitgeist*); (b) the person (individuals who are the source of

creativity in the domain); and (c) the field (experts from the domain who either accept or reject the novelty with regards to appropriateness, usefulness, and/or value).<sup>15</sup>

Even though there are many more definitions of creativity, the takeaway is that the individual and sociocultural approaches complement each other. Creativity takes place parallel at both levels; it takes place at the individual level as well as within social and cultural systems. Eventually, creativity leads to novel ideas, the product of creativity. However, novel ideas do not just appear; they are the outcome of a process, the process of creativity. Thus, in its essence, creativity is a system of the following interrelated parts that make up the whole concept of creativity: “the creative person, the creative process, the creative product, and the creative context (press).”<sup>16</sup> Scott Isaksen, Brian Dorval, and Donald Treffinger put these four elements into a Venn diagram (see Appendix B) to portray their interconnectedness and interdependency.<sup>17</sup>

### **1.3 Scope**

With the knowledge that all these elements (person, process, product, and press) have an impact on creativity, this paper will firstly focus on the process, or the *creative process* to be exact, to generate or come up with novel ideas. This paper deliberately links the creative process with the problem-solving process, or more specifically, the Marine Corps Planning Process (MCP). Secondly, this paper will focus on the role of the commander who drives the planning process. How is he or she able to encourage creativity?

### **1.4 Creativity and the military planning process**

Today’s security environment is multifaceted, uncertain, and fast moving. In this environment, the commander faces complex and open-ended problems which he or she cannot solve by routine problem solving.<sup>18</sup> Horst Rittel and Melvin Webber categorized these challenging problems as “wicked” problems.<sup>19</sup> The problem may represent a (moral) dilemma

where no solution completely resolves the problem. Commanders and staffs need to deliberately progress through a military planning process to come up with an appropriate and useful solution to the problem. In the military, the resolution of a problem usually revolves around an overarching idea, in military vocabulary referred to as the concept of operations (CONOPS). In combat, the idea “should avoid traditional patterns. It should be bold and novel and be speedily executed....It should surprise and deceive the enemy.”<sup>20</sup> Hence, commanders and planners need to think creatively to come up with a solution that renders the enemy impotent. A prime historical example is the surprise amphibious assault at Inchon in 1950 (Operation Chromite).<sup>21</sup> However, constituent parts of an operation can also be creative, like the use of two portable Mulberry harbors to support the D-Day invasion in Normandy in 1944. Moreover, counterinsurgency experiences in Iraq and Afghanistan showed that creative ways to leverage the support of the population are equally or even more important to accomplish the long-term objectives of the operation. To come to the point, commanders and planners need to think creatively during the military planning process in order to devise novel, appropriate, and useful solutions for wicked problems.

#### **1.4 Thesis**

Although the MCPP is a problem-solving process that should inherently facilitate creative thinking, the sequence of the steps and numerous prescribed subroutines impede creative thinking. Moreover, top-down planning, one of the tenets of MCPP, might unintentionally undermine creative thinking. Therefore, it is important that commanders and planners have a good understanding of creativity.

## **1.5 Method**

This study begins with a comparison between the MCPP and empirically proven theories about the “creative process” in order to identify major differences between the processes. The paper will oscillate between the methodology of the six-step MCPP and literature of individualist and sociocultural creativity studies in order to deduce possible flaws in the MCPP which might constrain creative thinking. Subsequently, the role of the commander during the military planning process will be analyzed with regards to encouraging or impeding creativity. In order to bring in in-depth experiences, open interviews were held with eight commanders and planners. The respondents were predominantly from the United States Marine Corps; their ranks varied from Major to Lieutenant General. For the purpose of this paper, the interviewer conducted standardized, open-ended interviews (see Appendix D).<sup>22</sup> The participants’ experiences and viewpoints are incorporated in this paper.

## 2. MCPP versus the creativity process

*“If you wrestle with something, it is not a procedure, it does not follow steps. It is a cognitive process. You talk about it, listen to each other and synthesize the ideas.”*

*“As a commander I refused to use the military planning process.”*

Anonymous interviewees

In the introduction, creativity has been introduced in the context of four elements: person, process, product, and press. The second element, process, indicates that novel ideas do not mysteriously enter into someone’s mind in a flash of insight. Studies by cognitive psychologists and cognitive neuroscientists have shown that novel ideas arise due to several connected small moments of insights.<sup>23</sup> These insights develop over time.<sup>24</sup> Moreover, “significant creativity requires many of these small insights...embedded in a lifetime of hard work, collaboration, and expertise.”<sup>25</sup> Instead of the light bulb, a better metaphor for an insight would be the final brick in the wall.<sup>26</sup> In other words, one must master the language and conventions of the domain in order to be creative.<sup>27</sup> Hence, new ideas are the result from “the spontaneous integration of previously learned responses.”<sup>28</sup> When confronted with a problem, it is essential to tap that knowledge and experience.

Psychologists who have been researching the creative process for decades have observed that creativity tends to occur in a sequence of stages. The most simple model of the creative process is divided into two stages. The first stage encompasses *divergent thinking*. During this stage many ideas are generated. The second stage converges on the one best idea (*convergent thinking*). Psychologists have proposed many more expanded models. Keith Sawyer organized these various models into an eight-stage model, which builds on the consensus from cognitive

psychology that creativity is a result of many different mental processes.<sup>29</sup> Although the eight-stage model focuses on what goes on in the creator's mind, it is useful to compare the model with the six-step MCPP in order to identify major differences between the processes.<sup>30</sup> Moreover, it is useful to compare MCPP with creative problem-solving models. One model that is extensively in use by businesses, schools, and academic institutions is the Creative Problem Solving (CPS) framework from Scott Isaksen, Brian Dorval, and Donald Treffinger. They first published the CPS framework in 1994 and they have been improving the framework ever since.<sup>31</sup> When comparing these creativity processes with MCPP, it appears that MCPP has quite a few anomalies that impede creative thinking.

## **2.1 Problem framing**

MCPP as well as the creativity processes stress the importance of the first step and stage: “problem framing” (MCPP) and “understanding the challenge” (CPS) respectively. Both processes emphasize that “the formulation of the problem is often more essential than its solution. To raise new questions, new possibilities, to regard old questions from a new angle, requires creative imagination and marks real advance.”<sup>32</sup> Thus, a commander and his or her staff need to frame the problem as a prerequisite to continue the planning process.

The various subroutines of MCPP's problem framing step, however, inhibit the commander and his or her staff from attaining a holistic understanding of the problem. Most subroutines of the problem framing step are analysis-based (task analysis, terrain analysis, relative combat power analysis, center of gravity analysis, et cetera).<sup>33</sup> They help the planners to examine elements of the environment and reach a logical understanding of those elements. The planning team typically breaks up into smaller groups to execute the numerous subroutines. These subroutines, however, do not serve the commander and his or her staff very well when they



are facing a wicked problem. Rittel and Weber conclude that wicked problems can be solved only through an “argumentative process in the course of which an image of the problem and of the solution emerges gradually among the participants, as a product of incessant judgment, subjected to critical argument.”<sup>34</sup> In other words, the commander and planners need to partake in a thorough exchange of arguments to create a “shared understanding about the problem and shared commitment to the possible solutions.”<sup>35</sup> John Schmitt argues that the commander and his or her planners should be engaged in a rigorous, structured “process of continuous and iterative conversational discourse [when faced with a wicked problem]. The discourse [should be] an interactive learning session. It [should be] an ongoing process of inquiry and argumentation that leverages the collective intelligence of the group.”<sup>36</sup>

Even though Marine Corps Warfare Publication (MCWP) 5-1, *Marine Corps Planning Process*, claims that the process “provides venues for interactions between the commander and the staff,”<sup>37</sup> MCWP 5-1 fails to emphasize the importance of organizational learning through continuous and iterative dialogue. The doctrine states that the staff regularly briefs the commander on the results of their actions.<sup>38</sup> Thereafter, the commander provides guidance which “represents a synthesis of the staff’s input, along with other sources of information, which manifest in the form of a decision about how to proceed.”<sup>39</sup> At the end of the problem-framing step, “the staff presents a problem framing brief to the commander to review the completed products and to ensure a shared understanding within the staff.”<sup>40</sup> MCWP 5-1 is, however, rather vague about how the commander exactly brings this shared understanding about, especially when in practice most commanders have only limited time vis-à-vis their staff.<sup>41</sup>

MCCP’s problem-framing step is predominantly focused on the numerous products of the many subroutines. MCWP 5-1 includes several short lists which could easily lead the reader to a checklist mentality. Moreover, the staff typically captures the products in some sort of fixed

template.<sup>42</sup> Planners have been taught how to produce these products during Professional Military Education (PME). On the positive side, the standardization of the products facilitates a common understanding. Planners know what they have to produce. They are familiar with the procedure. This could save time in a time-constrained environment. On the flipside, however, this means that the situation will be analyzed in a mechanical manner, often referred to as the “science of war.” The planners are very anxious to produce the products in accordance with the schoolbook method. They do not necessarily create the products that provide the best understanding of the situation.<sup>43</sup> When facing a wicked problem, fixed templates often do not correspond to the reality of the problem.<sup>44</sup> For that reason, commanders and staffs must be aware that group dialogue is of utmost importance to construct a shared mental model of the problem.

Another significant weakness of the MCPP is that the problem-framing step brings divergent thinking to an end – a prerequisite to creatively solve complex, open-ended problems. Commanders and planners often view the wording of the *mission statement*, one of the products of step one of the MCPP, as the apotheosis of their shared understanding.<sup>45</sup> The commander (or the staff on behalf of the commander) typically articulates the mission statement in doctrinal language. According to MCWP 5-1, the mission statement addresses the task (*who, what, when, where*) and purpose (*why*), “and as much of the *how* as necessary to ensure command, control, and coordination.”<sup>46</sup> The *what* of a textbook mission statement normally entails the tactical task that has to be executed (for example: delay, turn, destroy, hold, seize, block, isolate, et cetera).<sup>47</sup> Commanders and planners typically also include the type of operation in the mission statement (for example: frontal attack, envelopment, turning movement, penetration, infiltration, defense in depth, et cetera). The tactical task and the type of operation each adhere to a precise definition. Hence, even though these military terms bolster a common understanding, the mission statement represents an overly prescriptive “solution path” at the end of step one of the MCPP.

Furthermore, on completion of the problem-framing brief, the commander “articulates his [course of action (COA) guidance], a clear and concise expression of what he intends to accomplish and *how* it will be done using available resources.”<sup>48</sup> Hence, at the end of MCPP’s problem-framing step, the commander and his staff have not necessarily established a shared understanding of the problem, but they have essentially articulated a solution to the problem.<sup>49</sup>

Scott Isaksen, et al, call this phenomenon a problem-solving block due to premature judgment (or solution fixedness).<sup>50</sup> In the military, this is sometimes referred to as the preset habit to seek the “familiar” solution and revert to action promptly. Even though MCWP 5-1 advocates that a commander, the staff, and subordinate commanders need to pursue “a collective level of understanding” of the problem (through design, commander’s orientation, and commander’s initial intent and guidance), the publication does not stipulate that the planning team has to combine the constituent elements of the foregoing analyses into a problem statement or some sort of mental model of the problem.<sup>51</sup> In the current, complex security environment, commanders and planners must first accurately formulate the problem and subsequently find workable, creative solutions before articulating *what* (mission statement) to do in response to an assigned mission.

In general, creativity researchers define the problem statement as the delta between the current state and the opportunity or need to do something to create a desired future state. In short, the problem is “a situation with a goal and an obstacle.”<sup>52</sup> Professor Mark Runco argues that problems are not objective entities. They are interpreted differently. Therefore, commanders and planners need to establish a common mental model of the problem in an unambiguous and clear manner.<sup>53</sup> Isaksen, et al, advocate that it is of great importance that all participants understand the problem as a prerequisite for the generation of many usable ideas and possible

solutions. As John Dewey, a well-known educational philosopher, once stated, “A problem well stated is a problem half solved.”<sup>54</sup>

To conclude, even though the titles of the first step of MCPP (problem framing) and first stage of the creative problem-solving process (understanding the problem) hint that the processes are identical, both processes differ distinctly with regards to the outcome. While MCPP advocates the articulation of a mission statement, commander’s intent, and commander’s COA development guidance at the end of the problem-framing step, the creativity process focuses on the construct of a shared understanding of the problem. MCPP’s first step ends with the convergence on one or more “solution paths” while the creativity process continues divergent thinking during the next stage of the process. The point here is that the MCPP’s first step is very much product-based and tends to generate a solution (convergent thinking) before the problem is really understood and before an exploration of *ideas* has genuinely taken place.

It must be said, however, that some of the outcomes of MCPP’s problem-framing step, such as the commander’s intent, fully support the commander and his or her staff to obtain an understanding of the problem. The commander’s intent succinctly describes “the desired result of the action.”<sup>55</sup> In other words, the commander’s intent explains the conditions that define the desired future state without articulating *how* to bridge the gap between the current state and the desired future state. Moreover, MCWP 5-1 explains that “the commander’s intent is the commander’s personal expression of the purpose of the operation.”<sup>56</sup> Planners and subordinate commanders need to have an understanding of the commander’s intent since it guides all planning and actions. It allows planners and subordinate commanders to exercise “initiative in the face of disorder and change.”<sup>57</sup> Professor Teresa Amabile argues that “clearly specified goals often enhance people’s creativity.” She argues that employees need to know where they are

heading; otherwise, even the most creative persons will not produce usable, novel ideas. The key to creativity is to give employees the freedom to decide *how* to reach the desired future state.<sup>58</sup>

## **2.2 Course of action development, comparison, and decision**

The previous section's penultimate paragraph concluded that MCPP's problem-framing step is for the most part a procedural, solution-focused routine. At the end of the problem-framing step, the commander typically instructs the planners to develop one to three COAs. This section will explain that the development of multiple COAs is a useless effort.

According to MCWP 5-1, "course of action development [step 2 of the MCPP] leads to one or more options for *how* the mission and commander's intent might be accomplished."<sup>59</sup> Planners may develop COAs sequentially or simultaneously in separate teams. In the Marine Corps, the planners typically develop and present the COA in a standard format, the COA graphic and narrative. Furthermore, the developed COA includes the task organization, the purposes and tasks for the main effort and supporting efforts, control measures, the synchronization matrix, supporting concepts, et cetera.<sup>60</sup> Hence, a developed COA represents a rather detailed description and/or visual illustration of how a unit will accomplish its mission. When taking the above mentioned attributes of a developed COA into account, one might describe MCPP's COA development step as a planning activity that is described in Marine Corps doctrinal publications as *functional* and *detailed planning*. Functional planning involves the construction of supporting plans in warfighting functional areas (maneuver, logistics, force protection, fires, et cetera).<sup>61</sup> Detailed planning involves the translation of "the broad concept into a complete and practicable plan."<sup>62</sup>

The detailed development of more than one COA, however, has no utility. Firstly, the development of two or more complete COAs takes considerable time. Secondly, the COAs

cannot be really different since they all originate from the same mission statement, commander's guidance, and commander's intent which have been formulated by the commander at the end of the problem framing step. In practice, one of the COAs portrays what the commander believes is a satisfactory and sufficient solution. The other COAs are generally look-alike versions of that solution. They do not really stand out in terms of novelty and uniqueness. What is more, Rittel and Weber argue that "the process of formulating the problem and of conceiving a solution (or re-solution) are identical."<sup>63</sup> In other words, they argue that when the commander and his or her staff understand the logic of a problem, the solution usually emerges. When the solution becomes evident, the commander decides to start detailed planning. Thus, instead of developing several COAs and going through the charade of comparing them, a far better and time-saving approach is for the commander to offer a proposed concept of operation that the staff tests, improves, and evaluates.<sup>64</sup> The entire command focuses on that single concept of operations.

Another unnecessary step of the MCPP, the *course of action comparison and decision* step (step 4 of the MCPP), takes place once the COAs have been developed and war gamed. During this step, "the commander evaluates each friendly COA against established criteria, compares them with each other, and selects the COA he believes will best accomplish the mission."<sup>65</sup> Since the complexity of wicked problems cannot be expressed in numbers, "the numerical weighing of factors offers little insight into the merits of one COA over another."<sup>66</sup> Thus, in practice, the commander and his or her staff chose the COA that corresponds to their intuitive feel for the best solution. In other words, they knew which COA was the preferred COA all along, even before they started to develop the assorted COAs.<sup>67</sup> They intuitively recognize the preferred COA based on their knowledge and years of experience in the military domain. This fact is shared by "most creativity studies [that] have revealed that people are good at critically evaluating their many ideas and selecting the best one."<sup>68</sup>

In conclusion, the development and comparison of several COAs are superfluous activities when a commander and his or her staff face a wicked problem. Research in the field of cognitive psychology over the past five decades has revealed that step two (COA development) and four (COA comparison and decision) of MCPP are “inadequate and misleading.”<sup>69</sup> The crux is that when the commander and his or her “planners understand the logic of the [wicked] problem, they also see the counter-logic.”<sup>70</sup> Thus, naturally one solution emerges. There is no value in developing more than one COA.

### **2.3 Idea generation and selecting the best ideas**

The *idea generation* is a completely different activity than COA development. While a course of action is a description of how a unit will accomplish its mission, an idea “is a beginning concept or preliminary thought.”<sup>71</sup> Idea generation resembles *conceptual* planning, which is the creativity process that corresponds to the “art of war.”<sup>72</sup> During the idea generation the commander and his or her planners team up to generate as many ideas, options, and solutions as possible in accordance with the problem statement.<sup>73</sup> Again, the problem statement should have been worded and/or portrayed clearly with specified goals. Otherwise, the idea generation stage will drift aimlessly and result in useless ideas.<sup>74</sup> Sawyer explains that the idea generation should be carried out by discourse. In a successful planning team the individual members complement each other, “with each person’s contribution inspiring the others to raise the bar and think of new ideas.” The ideas lead to new insights, and eventually, the many small insights accumulate into an emergent, novel solution. It only becomes clear afterwards how exactly an earlier idea or insight contributed to the emerging total picture.<sup>75</sup> Hence, creativity emerges over time in a complex, nonlinear fashion. The solution goes beyond what could have been predicted beforehand.<sup>76</sup> The solution incites surprise “because it is more than the logical next step.”<sup>77</sup>

If there is one part of the problem-solving process that is pure synthesis and therefore cannot be proceduralized, it is the generation of ideas. As mentioned above, during idea generation the commander and his or her staff should bring many ideas forward. Throughout the discourse, these ideas combine in unexpected ways. Therefore, when it comes to the generation of ideas, the commander and his or her staff need to adopt a planning style that is counter-intuitive to the military habit. They have to take the time to generate ideas, even though some of the emerging ideas might seem useless or farfetched. They have to realize that all ideas, even unusual ideas, are processed in their unconscious mind and might lead to new, useful insights. “Exceptional creators throughout history have said that their best ideas emerge from an unguided, unconscious process.”<sup>78</sup>

It is important to note that many studies have confirmed the generation of ideas in the form of brainstorming or discourse should be carefully organized and performed to prevent productivity block or loss. Sawyer sums up many factors that might inhibit the productivity of brainstorming. For example, participants may “free ride” on the efforts of others. This means that one or more of the individuals of a brainstorm group take a “backseat” because they believe that the other members will generate plenty of ideas anyway. Another example is that “groups tend to talk about information that everyone shares (topic fixation) and tend not to talk about information held only by one individual (hidden profile).”<sup>79</sup> Isaksen, et al, argue that “when [a team] want[s] to generate options, evaluation is likely to get in the way... [Therefore], it is more effective to let options flow, without any criticism or praise.”<sup>80</sup> To come to the point, commanders and planners who participate in a brainstorm session should understand the strengths, weaknesses, and pitfalls of brainstorming. Fortunately, commanders and planners can revert to ample literature regarding effective and efficient brainstorming to enable them to generate high-quality creative ideas.



The idea generation stage naturally converges on the idea that is most appropriate and useful. The individual who first proposed the concept of divergent thinking, Joy Paul Guilford, argued that during the creativity process an evaluation of the ideas takes place “all along the way.”<sup>81</sup> Hence, for a person to be creative, he or she also needs to be able to accurately assess the potential of ideas. As mentioned before, creativity requires a substantial amount of “domain” expertise (see first paragraph, Chapter 2). Moreover, domain expertise simultaneously contributes to the ability to accurately assess the creative potential of the ideas.<sup>82</sup> Thus, divergent and convergent thinking take place parallel during the idea generation and selection.

In conclusion, the idea generation and selection accumulates into an emerging idea of how to resolve the problem. This emerging idea is the rough-cut CONOPS. In this context, the CONOPS is the plan of *how* the command will work towards the desired state. Thus, not earlier than after the completion of the idea generation and selection stage, the commander is able to formulate a mission statement or the “actions that might effectively narrow the gap between what-is and what-ought-to-be.”<sup>83</sup> Subsequently, the planners further develop and wargame the CONOPS in a similar way as they would develop a COA.<sup>84</sup>

## **2.4 Different problems require different approaches**

One might conclude after reading the previous paragraphs that the MCPP is an obsolete planning process. However, this is not the case. The MCPP still has utility for a myriad of problems the military faces. Commanders should know what problem they are facing because each type of problem requires a different problem-solving approach.

Professor Gerald Steiner makes a distinction between simple, complicated, and complex problems. He argues that the former two problems “can be solved by applying standard procedures in a more or less sophisticated manner.”<sup>85</sup> One can solve simple problems rapidly by

intuition since simple problems are built up of a small amount of elements. Complicated problems demand analytical thought since the problem is made up of many parts. However, these parts still behave in a linear, or predictable fashion.<sup>86</sup> The MCPP allows competent officers to come up with effective plans to solve complicated problems. Complex problems, on the other hand, demand collaborative, creative problem-solving. Complex problems “relate to situations for which there is no current awareness.”<sup>87</sup> This means that the commander might recognize some aspects and patterns from previous problem-solving evolutions, but in totality the problem is unique. Therefore, the problem requires a unique solution. The commander cannot apply what is sometimes called a “cookie cutter,” which means that the commander takes what he or she has used previously, and applies it to the contemporary problem.<sup>88</sup> Thus, when the commander recognizes a complex problem, he should circumvent MCPP’s mechanical approach.

The commander and the staff can use other approaches than the MCPP to facilitate the resolution of wicked problems. Firstly, the commander and his or her staff could use the CPS framework. This creative problem-solving process, which has been built for businesses organizations, might suffice. However, this implies that commanders and planners need to become familiar with yet another problem-solving methodology. Another option is the correct use of *design*. In the 1990s, retired Israeli Defense Force Brigadier General Shimon Naveh introduced design to the military. His design methodology was based on system theory, systems thinking, and advances in cognitive science.<sup>89</sup> In a nutshell, the essence of design is that experienced decision makers spend considerably more time on understanding the “highly complex, dynamic, and novel problem situations for which the known and practiced solutions of doctrine may not suffice.”<sup>90</sup> Commanders and planners use design to come to grips with the essential nature of the problem.<sup>91</sup> The underlying premise of design is that when the commander and his or her planners hypothesize the problem, the contours of a solution emerge intuitively.<sup>92</sup>

Design generally precedes detailed planning. Design is in its essence a critical and creative thinking methodology that has been put forward for the military.

In 2010, the US military incorporated design officially to its problem-solving processes.<sup>93</sup> However, since then a lively debate among military intellectuals is ongoing about whether design was incorporated correctly. The Marine Corps tried to incorporate design into the MCPP. However, the authors kept the many mechanical subroutines in the process. As a result, the MCPP has become an odd planning process which combines the mechanical problem-solving approach with a systemic problem-solving approach. For example, if the authors of MCWP 5-1 had been familiar with design, it is unlikely that they would have developed step two and four leading to the development and comparison of multiple courses of action. If the authors had been familiar with creativity studies they might have incorporated a stage such as *idea generation and selection* into the process. Hence, commanders should be aware of the type of problem they are facing and subsequently apply the most suitable problem-solving methodology. Since there is no such thing as the “correct problem-solving process,” commanders should fully engage with planners and drive the planning process in the direction that seems to fit the problem.

## **2.5 Conclusion**

This chapter has identified and explained several flaws of the MCPP with regards to inhibiting creativity. When applying MCPP, commanders and their staffs are basically pulled into a very rigid, mechanical problem-solving process. The process calls for a quick resolution of the problem, even before the problem has been properly framed. Moreover, the many product-based subroutines impede the synthesis of ideas. Furthermore, the development and comparison of more of the same COAs does not give any added value. In short, MCPP’s procedural focus

comes at the expense of creative thinking, especially when creative thinking is needed, namely when commanders and planners face wicked problems.

Does this mean that the MCPP is useless? The answer is most definitely “no.” The MCPP framework still has utility when a commander and his or her staff face a situation that is new or novel, but one for which commanders know the rule-set or procedures they need to use. Lieutenant General Van Riper (Ret.) argues that MCPP is applicable when commanders and planners are confronted with well-structured or “tame” problems.<sup>94</sup> An example is when commanders and planners face a mission that is tightly encapsulated in a hierarchical continuum. The higher commander’s delegated mission basically becomes the unit’s mission statement. The overall commander’s intent leads to subordinate units’ intents while the use of doctrinal vocabulary bolsters common understanding throughout the chain of command.

### 3. The commander and creativity

*“Leadership inhibits creativity more than anything else.”*

Anonymous interviewee

In the previous chapter, the MCPP and theories about the “creative process” have been compared. The comparison illustrated that the MCPP has several flaws that inhibit creativity. The commander should be aware of these flaws. The commander who understands the weaknesses of the current six-step MCPP is able to obviate the shortcomings while enhancing the generation of novel ideas. The process, however, is only one of the elements of creativity. As mentioned in the introduction, creativity can be described as a system of the following four themes that overlap and intertwine: “the creative person, the creative process, the creative product, and the creative context.”<sup>95</sup> The commander has a profound impact on all of these elements. The commander, for example, drives the planning process to come up with novel ideas.<sup>96</sup> He or she leads the team of creative persons. And at the end of the day, the commander makes the decision to implement an idea or product. There is a rich literature available on how leaders can create a climate that encourages creativity within their organizations. This chapter will not duplicate the vast literature. Instead, it zooms in on the role of the commander in light of the conclusions of the previous chapter.

#### 3.1 The commander’s attitude

*“If you would have asked, ‘How could you have made that decision?’ I couldn’t tell. It was drawn from so many places.”*

Anonymous interviewee

Commanders have to realize that they shape the climate that impedes or encourages creativity. After more than two decades of research, Professor Theresa Amabile argues that

within an individual, creativity is the merger of three elements: (1) creative-thinking skills, (2) expertise, and (3) motivation. She concludes that expertise and creative thinking are an individual's natural resources, but "motivation determines what people actually do."<sup>97</sup> People are more motivated when they know that their creative input is heard. They are more motivated when they feel that they make a contribution to the solution. And the more motivated they are, the more productive they are. Obviously, the commander has a central role in motivating the staff. Most commanders, however, have spent their whole careers in the military. They are used to the hierarchical military organization with its rules, discipline, and obedience to higher-level orders. Many creativity researchers argue that "hierarchies turn out to be remarkably inefficient when organizations are trying to leverage creative ideas."<sup>98</sup> Runco argues that creative behavior is a kind of nonconformity. Leaders have to be unconventional.<sup>99</sup> Creative behavior is contrary to norms, and thus, creativity is a kind of deviance.<sup>100</sup> The military commander, therefore, has to adopt several counter-intuitive attitudes.

Firstly, even though a commander has a lot of contingencies, his or her presence is essential during conceptual planning. The commander needs to participate in the process of identifying the true nature of the problem. He or she needs to be involved when the many ideas are generated to resolve the problem at hand. As aforementioned, through discourse the commander and his or her planning team develop a common understanding of the problem. Once they understand the dynamics of the problem, the contours of the solution emerge intuitively. During the idea generation, individuals within the team feed off one another – discovering, challenging, and improving ideas. If the commander is not part of the discussions, arguments, and debate, he or she will never truly understand the problem and its resolution. The commander might even interpret the situation completely different. Moreover, the commander has information the staff does not have. A four-star general, for example, goes to Congress. A

Combatant Commander talks to the Joint Chiefs of Staff and might have tête-à-têtes with the President. The Joint Forces Commander has access to the ambassador. At the battlefield, the commander meets local leaders, the police commander, and local politicians. In short, commanders have access to persons and information staff officers will never have. The commander should set the context and keep his planners up-to-date. Hence, commanders should be in that room during conceptual planning.

Secondly, when the commander participates in the discourse, he or she must firmly believe that good ideas come from anywhere. The commander must believe that the best idea is somewhere in the room, and probably not in his or her head. Ideas emerge from the bottom up; therefore, he or she should not dominate the group.<sup>101</sup> The commander must avoid setting the tone of professional debate and thereby suppressing contrary views. He or she should very carefully participate in any discourse. The commander needs to ensure the planners know that he or she wants to hear their ideas.<sup>102</sup> For that reason, the commander must respond enthusiastically to all ideas. He or she must not ridicule a planner, even when the planner has brought forward several “bad” ideas in a row. When the commander discusses ideas with his or her planners, the commander should figuratively drop his or her rank. This might be awkward to commanders who have served in the military for many years, but this attitude greatly encourages creativity. Obviously, in the end, the commander still has to “pull rank” and make a decision all by him or herself. The members of the planning team will understand and accept the decision when the commander has participated in the foregoing discourse.

Thirdly, US military leaders have the habit to come to a decision quickly. That is what has been ingrained during basic training and the first years of service. They have learned to make decisions instantly in the face of an enemy threat. The maneuver warfare doctrine emphasizes the need for *speed* to seize the initiative.<sup>103</sup> When facing wicked problems, however, the

commander needs to adopt a counter-intuitive attitude. The commander has to take time. Creativity studies point out that during the idea generation quantity leads to quality.<sup>104</sup> Paul Sloane, an author and public speaker on lateral thinking, argues that when groups start generating ideas, they first generate the obvious, easy answers. As they come up with more ideas, even the unorthodox ideas, novel solutions emerge. Thus, “the quality of ideas does not degrade with quantity.” The later ideas are often “the more radical ones from which a truly lateral solution can be developed.”<sup>105</sup> Professor Sidney Parnes argues that one of the key responsibilities of the leader, therefore, is to “extend the team effort” while generating ideas because it often takes time for better and useful ideas to surface.<sup>106</sup>

In summary, the commander should be in the room during conceptual planning. This is the time and place in which he or she can truly drive the process. The commander should carefully listen and ask questions to get a better understanding of the problem. The commander should not jump to conclusions, especially when he or she faces a wicked problem. The way a commander should behave is not bounded by abovementioned counter-intuitive attitudes. Each commander has personality traits that might impact the creativity of his or her team in a positive or negative way. Therefore, the commander should in the first place know himself or herself. As Sun Tzu wrote, “Know the enemy and know yourself; in a hundred battles you will never be in peril.”<sup>107</sup>

### **3.2 The commander’s planning team**

“Research shows that more diverse groups are more creative.”<sup>108</sup> After all, creativity is the result of associations (see Chapter 1.1). When two different ideas are “bumping” against each other, new ideas arise spontaneously. Within heterogeneous groups the different perspectives spark divergent lines of thinking. This results in richer, more complex ideas. Research has



shown that “the presence of even one [planner] who disagrees with the majority can deepen cognitive processing and lead to more reflective and integrative outcomes.”<sup>109</sup> Therefore, the commander should attempt to get planners with different backgrounds and disciplines together to resolve the problem.<sup>110</sup>

However, many studies have also shown that higher group diversity leads to higher levels of group conflict.<sup>111</sup> Sawyer explains that “there is an optimal degree of diversity: too much or too little reduces creativity.”<sup>112</sup> The commander must balance his or her team to maximize the creative output. This is not an easy job and not always possible since the commander does not necessarily have a vote in the composition of the staff. On top of that, the dynamics within a team change over time. Professor Bruce W. Tuckman argues that groups pass through five stages during their development: *forming*, *storming*, *norming*, *performing*, and *adjourning*.<sup>113</sup> Hence, the diversity and dynamics within a team can impede creativity.

In any case, the commander should try to involve his or her subordinate commanders when the planning team conducts conceptual planning. The subordinate commanders will be more receptive to the plan when they actually had a stake in the planning process. They are, after all, the ones who have to execute the plan. But more importantly, they truly understand the problem and the resolution when they have participated in the planning process. During the execution, they are able to work towards the desired state, even when the situation changes. They will have greater confidence in applying creative ideas themselves that support the overall goal and objectives of the mission. This is exactly the initiative the maneuver warfare doctrine underscores. Marine Corp Doctrinal Publication 1, *Warfighting*, emphasizes that “only through initiative we can ultimately impose our will on the enemy.”<sup>114</sup>

The commander should designate experienced people to conduct conceptual planning. As mentioned in paragraph two, one must master the language and conventions of the domain in

order to be creative. The “Ten-year Rule” explains that it takes 10 years of study and experience before a person makes his or her first contributions to the domain.<sup>115</sup> A staff officer cannot be creative without first internalizing the domain.<sup>116</sup> Therefore, John Schmitt and Gary Klein argue that “asking junior officers to generate [a CONOPS] when they lack the experience is really negative training, giving them the wrong idea about how insightful [a CONOPS is] created.”<sup>117</sup>

The reality is that creativity is not just a property of an individual. Creativity is a property of the team. A more diverse team tends to generate radical ideas. However, a higher degree of diversity could also lead to conflicts, which in turn impede creativity. The commander, therefore, has to balance his team and must not forget to include his or her subordinates in the planning process. Last but not least, “the most creative ideas come from people who are deeply familiar with a domain and immersed in it.”<sup>118</sup>

### **3.3 Commander’s intent**

*“You need to give them an idea of what you want: general guidance. Once you turn them loose they can come up with something very useful.”*

Anonymous interviewee

As aforementioned, commanders cannot expect the planning team to be creative if they do not know the direction in which they are heading.<sup>119</sup> Many studies have underscored the importance for commanders to set the goals and develop a shared sense of purpose.<sup>120</sup> The job of the commander is to communicate the destination clearly to the planners. This viewpoint coincides with the military viewpoint that one of the most important elements of military problem-solving is the commander’s intent. Without a purpose and goal a team will drift aimlessly. Field Marshal Sir William Slim described the importance of the commander’s intent as follows:

I suppose I have published dozens of operations instructions and orders, and I have never written one myself because I have always had excellent staff officers who could do it. But, there is one part of an order that I have always made a point of writing myself. That is the object [commander's intent]. I do recommend it to you, gentlemen, that when long orders are being written for [complex] operations, you take up your pen yourself and write the object in your own words so that object goes down to everybody.<sup>121</sup>

However, just painting a picture is not enough. The commander must encourage his or her staff to ask questions about the commander's intent. Again, the commander must spend time with his or her planning team.

### **3.5 Conclusion**

Creative leadership is the kind of leadership that encourages, stimulates, and guides the process of creativity from the beginning to the end. The commander has to cultivate a culture that is open for questioning and listening. The commander should fully participate in the conceptual planning for a number of reasons. Firstly, the commander usually has the most experience. Secondly, the commander has information that the staff does not have. Last but not least, the commander develops together with his or her planners and subordinate commanders an understanding of the situation and the problem during the process. Even though the commander contributes significantly to the process, he or she must recognize that the key to creativity are not his or her own abilities. The key to creativity lies in enabling the creative talents of the collective. Novel and useful ideas emerge from the bottom up.

## 4. Conclusions

*“To be creative is the highest achievable good. In an age in which creativity is actually a kind of moral imperative, who could imaginably be against creativity?”*  
Osborne, T.<sup>122</sup>

The comparison between the MCPP and several “creativity processes” that originate from vast literature of individual and sociocultural creativity studies reveals that the MCPP inherently constrains the generation of creative ideas, especially when commanders and planners face a wicked problem. The MCPP, as described in MCWP 5-1, is basically a rigid, linear problem-solving process.

During step one of the MCPP, problem-framing, the many subroutines do not fully facilitate the commander and his or her planners to get an understanding of the problem. The subroutines do not lead to a problem statement. Instead, step one of the MCPP, converges on the resolution of the problem. The outcomes of the problem-framing step are the mission statement, commander’s intent, and COA development guidance. Hence, the commander and his or her staff have not necessarily established a shared understanding of the problem, but they have essentially articulated a solution to the problem, even before the problem is well understood.

During steps two and four of the MCPP, COA development, comparison, and decision, the staff basically conducts detailed planning. The planners work out one or more COAs that originate from the outcomes of the problem-framing step. They essentially develop and compare COAs which are more or less the same since these COAs all originate from the same mission statement. The development of similar COAs does not give any added value, especially when the commander and the planners face a wicked problem. Cognitive and creativity studies have revealed that commanders and planners need to partake in a deliberate discourse to come to grips with the problem. Subsequently, they need to generate many ideas before a novel solution

emerges. The many small insights the team generates during the discourse accumulate into a novel solution which goes beyond what could have been predicted beforehand. This novel solution represents the actual rough-cut CONOPS of *how* the command will work towards the desired state. The planners should develop this CONOPS in detail instead of going through the charade of developing and comparing several COAs. The crux is that when the commander and his or her staff understand the logic of the problem, one solution set naturally emerges.

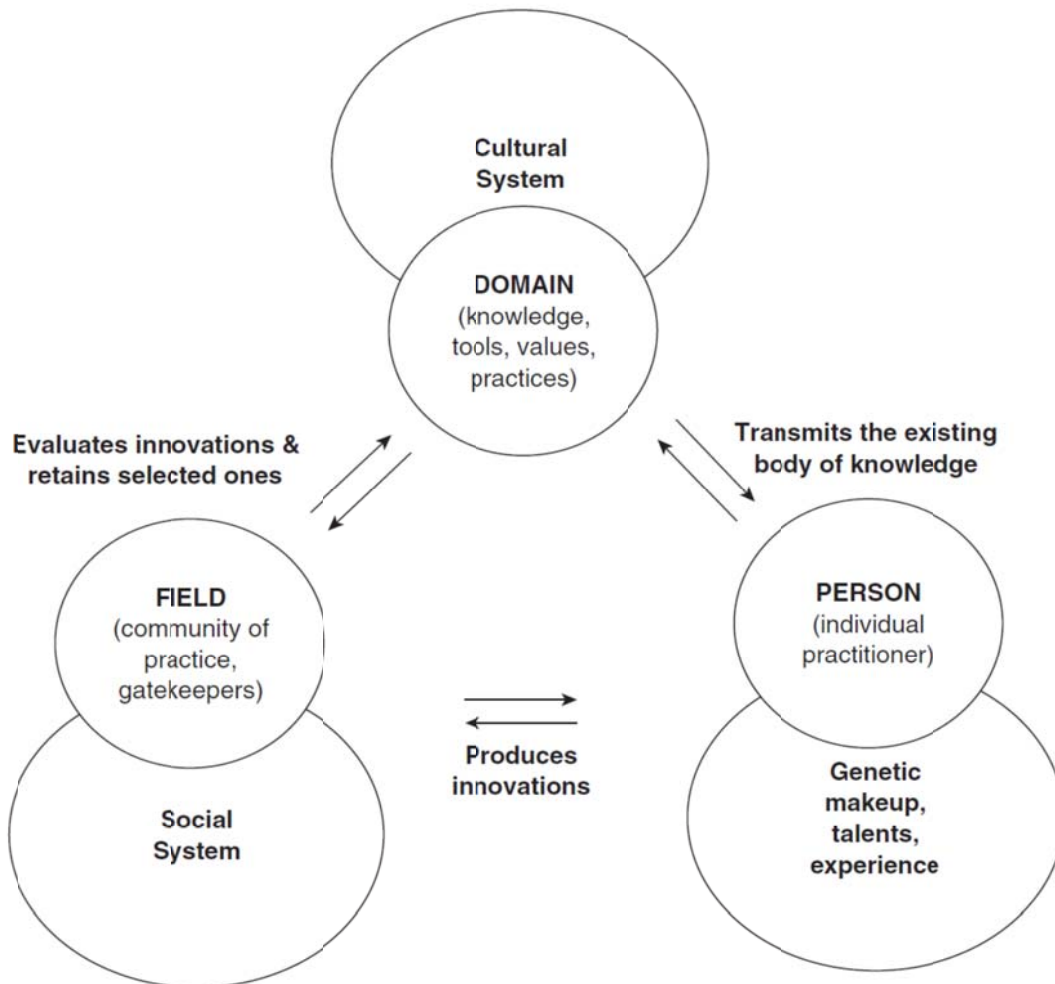
One might conclude that the MCPP is an obsolete planning process. The MCPP, as described in MCWP 5-1, is certainly an unsuitable problem-solving framework to resolve wicked problems. However, MCPP is still usable when commanders and planners face well-structured or “tame” problems for which they know the rule set. The commander and his or her staff could revert to more suitable methodologies or frameworks like CPS or *design* when facing complex problems. Since there is no such thing as the “correct problem-solving process,” commanders should fully engage with planners and drive the planning process in the direction that seems to fit the problem.

The commander who understands the weaknesses of the MCPP is able to circumvent them to create novel ideas. Moreover, he or she also has to adopt counter-intuitive attitudes to let creativity flourish within the planning team. To begin with, the commander needs to participate in the discourse during problem-framing and idea generation. The commander only gains a deeper understanding of the problem through interaction. If the commander is not part of the discussions, arguments, and debate, he or she might interpret the problem and its resolution (completely) different than the staff. In addition to that, the commander brings in unique experience and information that the rest of the staff does not have. In the end, the commander makes the decisions. Hence, the commander needs to be in that room with the planning team.

Nevertheless, he or she should very carefully participate in any discourse. The commander must avoid setting the tone. The key to creativity lies in enabling the creative talents of the collective.

As mentioned in the introduction, creativity is a merger of four interrelated elements: the creative person, the creative process, the creative product, and the creative context (press). This paper only covered the flaws of the MCPP that inhibit the generation of novel ideas. Moreover, the role of the commander during the planning process has been highlighted. Hence, this paper has only filled a small portion of the gap to explain how commanders and staffs can better generate creative ideas during the military planning process. In the past few decades, there has been a huge growth in the scientific understanding of creativity. Continuous research has revealed how people really come up with new ideas. Commanders and planners need to become familiar with the vast literature on creativity to generate new ideas that set them up for success in the future complex security environment. Until now, the military institution, with its hierarchical culture, organization, and processes, has not yet fully benefitted from this knowledge.

## Appendix A - Systems theory on creativity



Source: M. Csikszentmihalyi, "A Systems Perspective on Creativity," in *Handbook of Creativity*, ed. R. Sternberg (Cambridge, UK: Cambridge University Press, 1999), 313-335.

Creativity can be best understood as a "confluence" of three subsystems:

- (1) The *domain* includes the shared conventions. Any culture is composed of a large variety of domains (music, religion, military, and so on). Most human behaviors or activities are

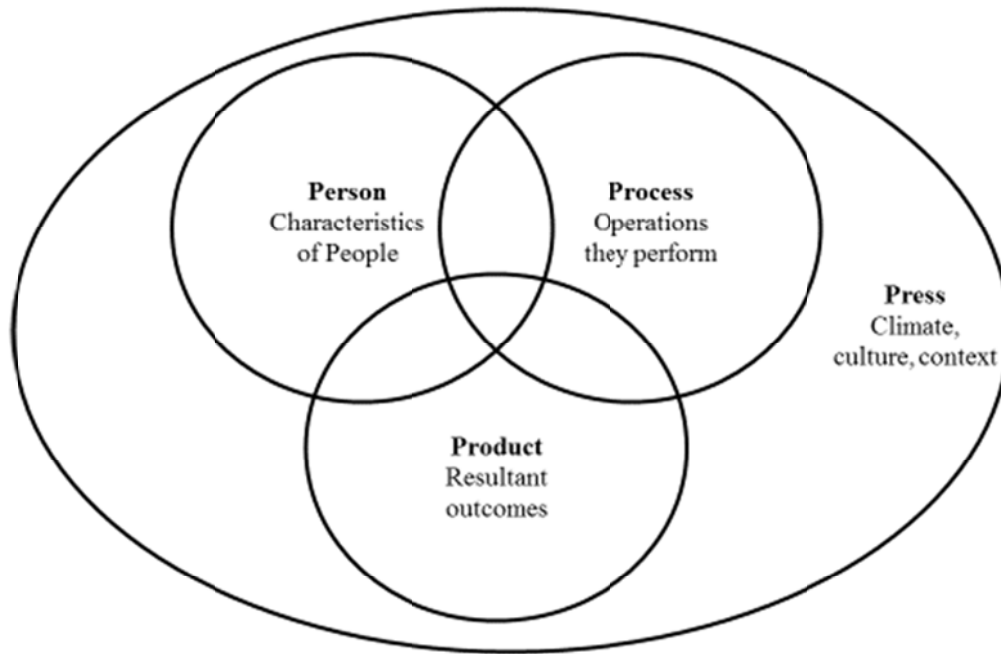
affected by the rules of some domains. Each domain has its own set of rules that may fluctuate in time.

- (2) The *individual* makes a novel idea in the contents of one (or more) domain(s).
- (3) The idea will be evaluated by the *field*. The fields are held by various gatekeepers, such as experts and scholars, who have the rights to choose which ideas enter the domain.

The systems theory on creativity can be applicable at different levels. For example, at one level of analysis the system comprises the operational planning team (OPT) of a Marine battalion, while at a higher level the system includes the entire U.S. military. Moreover, the occurrence of creativity is not a simple equation of how many creative individuals there are, but also of how responsive the social system is to novel ideas. Albert Einstein is called creative due to the fact that some of the most respected physicists (Field) embraced his ideas. The population could not understand or care about his ideas. The same applies for the painter Vincent van Gogh. We call him creative because, after his death, experts (Field) became aware of the qualities in his works, something his contemporaries did not notice. Another example in the military domain amplifies the importance of the Field. During the Korean War in 1950, General Douglas MacArthur would not have been able to proceed with the landing at Inchon without authorization from the Joint Chiefs of Staff (Field). MacArthur was able to proceed because of his insistence and his powers of persuasion, even though the encircled UN forces at Pusan doubted whether they could hold the massive North Korean assault on the Pusan perimeter at the Southern end of the Korean peninsula.<sup>123</sup>



## Appendix B - Mel Rhodes' framework of creativity



Source: Scott G. Isaksen, K. Brian Dorval, and Donald J. Treffinger, *Creative approaches to problem solving: a framework for innovation and change*, Third edition (Los Angeles: SAGE Publications, Inc., 2011), 7.

Many creativity researchers have been influenced by Mel Rhodes' four-part division of creativity:

1. *Person*: Many researchers have copiously studied the relation between personality traits and creativity, but they have not found a typical set of personality traits that characterizes the creative person. The creative performance of an individual is a function of the "person's behavior style, attention, motivation, specific context..., knowledge, skills, process expertise, emotional intelligence, the given work environment, and the available time."<sup>124</sup>
2. *Product*: The product should be appropriate, useful and valuable.
3. *Process*: Processes that are involved during creative work or creative thought.
4. *Press*: Rhodes described the concept of "press" as the "relationship of human beings and their environment."<sup>125</sup>

## Appendix C - Comparison of the MCPP and the creative process

MCPP
<p><b>1. Problem framing</b>            “Gain an enhanced understanding of the environment and the nature of the problem.”<sup>126</sup></p>
<p><b>2. Course of Action Development</b>            Solution of how the mission and commander’s intent might be accomplished.<sup>127</sup></p>
<p><b>3. Course of Action Wargaming</b>            Improve the plan.<sup>128</sup></p>
<p><b>4. Course of Action Comparison and Decision</b>            “The commander evaluates each COA against established criteria, compares them with each other, and selects the COA he believes will best accomplish the mission.”<sup>129</sup></p>
<p><b>5. Orders Development</b>            “Translate the commander’s decision into oral, written, and/or graphic communication sufficient to guide implementation and promote initiative by subordinates.”<sup>130</sup></p>
<p><b>6. Transition</b>            Actions to ensure a successful shift from planning to execution.<sup>131</sup></p>

Creative process <sup>132</sup>
<p><b>1. Find and formulate the problem</b>            The first step is to identify a good problem and to formulate the problem in such a way that it will be more likely to lead to a creative solution.</p>
<p><b>2. Acquire relevant knowledge</b>            Creativity is always based on mastery, practice, and experience.</p>
<p><b>3. Gather related information</b>            Creativity often results from alert awareness to unexpected and apparently unrelated information in the environment.</p>
<p><b>4. Take time off for Incubation</b>            The unconscious mind will process and associate all information in unpredictable and surprising ways.</p>
<p><b>5. Generate a variety of ideas</b>            Conscious attention to the problem results in potential solutions.</p>
<p><b>6. Combine ideas in unexpected ways</b>            Many creative ideas result from a combination of existing mental concepts or ideas.</p>
<p><b>7. Select the best ideas</b>            The creative process typically results in a large number of potential solutions. Most of them will turn out to be effective solutions; successful creators must be good at selecting which ideas to pursue further.</p>
<p><b>8. Externalize ideas</b>            Creative ideas emerge, develop, and transform as they are expressed in the world.</p>

Creative Problem Solving <sup>133</sup>
<p><b>1. Constructing opportunities</b>            Generate possible opportunities and challenges to consider. Focus by identifying the most promising opportunities to pursue.</p>
<p><b>2. Exploring data</b>            Examine many sources of data from different points of view. Identify the key or most important data.</p>
<p><b>3. Framing problems</b>            Generate many, varied, and unusual ways to state the problem. Select or form a specific problem statement.</p>
<p><b>4. Generating ideas</b>            Produce many, varied, and unusual ideas. Identify ideas with interesting potential to develop or use.</p>
<p><b>5. Developing solutions</b>            Find ways to develop and strengthen promising possibilities. Analyze, evaluate, prioritize, and refine promising solutions.</p>
<p><b>6. Building acceptance</b>            Consider various sources of assistance and resistance and possible actions for implementation. Formulate specific plans to gain support for, carry out, and evaluate actions.</p>

## Appendix D - Questionnaire Open-Ended Interview

### Questions:

1. Can you please provide me the following details about your experience with regards to MCPP:  
(a) Mission/exercise name, (b) Period, and (c) Position held.
2. How important is creative thinking to you when preparing and planning operations?  
Why?
3. What do you do to encourage creative thinking during MCPP (as an individual or team)?  
Do you use specific techniques?
4. Based on your experience, what features of the process constrain/inhibit creative thinking?
5. Based on your experience, what features of the process promote creative thinking?
6. In which step of MCPP is creative thinking most important? And why?
7. Did you experience situations that inhibited creative thinking? If yes – why? If no – why not?
8. Based on your experience, what role has the commandant in creative thinking?
9. Additional comments.

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## Endnotes

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<sup>1</sup> Marine Corps University, *Creating the 5000 Year Old Mind. Creative Problem Solving: Warfighting Skills for the 21<sup>st</sup> Century*, Quality Enhancement Plan for Marine Corps University 2015-2020, 2014, page 18.

<sup>2</sup> Headquarters U.S. Marine Corps, *Warfighting*, MCDP-1 (Washington DC: U.S. Marine Corps, 1997), 53.

<sup>3</sup> Williamson Murray, *Military Adaption in War: With Fear of Change* (Cambridge: Cambridge University Press, 2011), 307.

<sup>4</sup> Elizabeth D. Samet, *No man's land : preparing for war and peace in post-9/11 America* (New York: Farrar, Straus and Giroux, 2014).

<sup>5</sup> Marine Corps University, *Creating the 5000 Year Old Mind*, page ii.

<sup>6</sup> David Alexander and Andrea Shalal, "Hagel announces push to boost U.S. military's technological edge," Reuters online, last updated November 15, 2014:

<http://www.reuters.com/article/2014/11/16/us-usa-defense-hagel-innovation-idUSKCN0J000B20141116>

<sup>7</sup> Milan Vego, "On Military Creativity," in JFQ, issue 70, (3<sup>rd</sup> quarter, 2013), 83

<sup>8</sup> According to Joint Publication 3.0 operational art is defined as "the use of creative thinking by commanders and staffs to design strategies, campaigns and major operations and organize and employ military forces." Moreover, "operational design extends operational art's vision with a creative process that helps commanders and planners answer the ends-ways-means-risk question." See JP 3.0, Operations (Washington, DC: Joint Chiefs of Staff, 11 August 2011), xii-xiii. According to Marine Corps Doctrine Publication 5 "planning involves elements of both art and science, combining analysis and calculation with intuition, inspirations and creativity." MCDP 5 further explains that planning should encourage creativity since maneuver warfare depends on the insight and creativity of commanders and planners. See MCDP 5, *Planning* (Washington, DC: Headquarters United States Marine Corps, 1997), 26 and 63. Marine Corps Warfighting Publication 5-1 explains that "conceptual planning [the highest level of planning on the planning hierarchy] is a process of creative synthesis supported by analysis." See MCWP 5-1, *Marine Corps Planning Process* (Washington, DC: Headquarters United States Marine Corps, 2010), 1-2. All publications, however, give no explanation on how to encourage creativity or how to let creativity flourish.

<sup>9</sup> Little c creativity is the creativity that is part of all human beings in their daily interactions. An example is a copywriter or editor who comes up with catchy phrases or headlines. Another example is someone who has to improvise during cooking because he or she does not have all ingredients for the recipe. Children are continually creative by figuring out new things, like building a block tower for the first time. People around the world have solved the same problems thousands or even millions of times before, but as long as it is their first time, it meets the definition of little c creativity. See Keith R. Sawyer, *The Science of Human Innovation – Explaining Creativity*, 2<sup>nd</sup> Edition (New York: Oxford University Press, 2012), 8.

<sup>10</sup> Alexander Bain, *The senses and the intellect* (Washington, D.C.: University Publications of America (Reprint of 1855 edition published by John W. Parker and Son, London))

<sup>11</sup> Keith R. Sawyer, *The Science of Human Innovation – Explaining Creativity*, 2<sup>nd</sup> Edition (New York: Oxford University Press, 2012), 7-8.

<sup>12</sup> Sawyer, *The Science of Human Innovation*, 8-10.

<sup>13</sup> Ibid, 223.

<sup>14</sup> Ibid, 214.

<sup>15</sup> Mihaly Csikszentmihalyi, "The Systems Model of Creativity and Its Applications," in *The Wiley Handbook of Genius*, ed. Dean Keith Simonton (Chichester: John Wiley & Sons, Ltd., 2014) 533-545.

<sup>16</sup> This broad framework to describe creativity has been first offered by Professor Mel Rhodes and has been used by many scientist ever since. See Mel Rhodes, "An analysis of creativity," in *Phi Delta Kappan*, vol. 42, no. 7 (1961): 305-310.

<sup>17</sup> Scott G. Isaksen, K. Brian Dorval, and Donald J. Treffinger, *Creative approaches to problem solving: a framework for innovation and change*, Third edition (Los Angeles: SAGE Publications, Inc., 2011), 7.

<sup>18</sup> In this context the term routine problem-solving refers to intuitive and analytical decision-making. A commander resorts to intuitive decision-making or "cognitional" decision-making when he/she recognizes the resolution of the problem. In other words, the commander knows intuitively what to do. Decision-making literature identifies intuitive decision-making as "System 1". A commander resorts to analytical decision-making when he or she faces a problem that is new or novel and cannot be resolved through intuitive decision-making, but for which the commander knows the rule-set or procedures. Decision-making literature identifies analytical decision-making as

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“System 2”. Both approaches are applicable for well-structured or “tame” problems. See Paul K. Van Riper, *An Introduction to System Theory and Decision-Making*, February 2015, p.12.

<sup>19</sup> Horst W.J Rittel & Melvin M. Weber, “Dilemmas in a General Theory of Planning,” *Policy Sciences* 4 (1973), 160-167.

<sup>20</sup> Vego, “On Military Creativity,” 88-89.

<sup>21</sup> Noteworthy is that “it is an error to think that surprise by itself determines more than the outcome of the first engagement. Thereafter other factors...come into play.” See Eliot A.Cohen and John Gooch, *Military Misfortunes* (New York: The Free Press, 1990), 42. Clausewitz reinforces this idea in his classic book *On War*: “But while the wish to achieve surprise is common, and, indeed, indispensable, and while it is true that it will never be completely ineffective, it is equally true that by its very nature surprise can rarely be outstanding successful. It would be a mistake, therefore, to regard surprise as a key element of success in war. The principle is highly attractive in theory, but in practice is often held up by the friction of the whole machine.” See Carl von Clausewitz, *On War*, Michael Howard and Peter Paret, eds. and trans. (Princeton: Princeton University Press, 1976), 198. See also Clausewitz’s general discussion of surprise in book 3, chapter 9, *On War*, p. 198-201.

<sup>22</sup> Daniel W. Turner, III, “Qualitative Interview Design: A Practical Guide for Novice Investigators,” in *The Qualitative Report*, volume 15, number 3(May 3, 2010): 754-760.  
<http://www.nova.edu/ssss/OR/OR15-3/qid.pdf>

<sup>23</sup> Sawyer, *The Science of Human Innovation*, 125/139.

<sup>24</sup> Marc A. Runco, *Creativity: Theories and Themes, Research, Development and Practice* (Burlington, MA: Academic Press, 2006), 25.

<sup>25</sup> Sawyer, *The Science of Human Innovation*, 405.

<sup>26</sup> Decades of research reinforces the wisdom of Thomas Edison’s famous saying: “genius is one percent inspiration and ninety-nine percent perspiration.” See J. Bartlett, *Familiar quotations: A collection of passages, phrases, and proverbs traced to their sources in ancient and modern literature* (Boston: Little, Brown, 1955), 735.

<sup>27</sup> The “Ten-year Rule” explains that it takes 10 years of study and experience before a person makes his or her first contributions to the domain. See H. Gardner, *Creating minds* (New York: Basic Books, 1993). Moreover, studies of expertise by Ericsson and others have found that performance at world class level is only possible after a person invested 10,000 hours of deliberate practice in the domain. See K.A. Ericsson, R.T. Krampe, and C. Tesch-Romer, “The role of deliberate practice in the acquisition of expert performance,” in *Psychological Review*, 100 (3) (1993): 273-305.

<sup>28</sup> R. Epstein, “Generativity theory and creativity,” in *Theories of creativity*, ed. M.A. Runco & R. S. Albert (Newbury Park, CA: Sage, 1990): 116-140.

<sup>29</sup> Sawyer, *The Science of Human Innovation*, 88-90.

<sup>30</sup> A comparison between MCPP and the creative process is meaningful since many cognitive psychologists argue that creativity is essentially a form of problem solving. See Runco, *Creativity*, 14.

<sup>31</sup> Isaksen, Dorval, and Treffinger, *Creative approaches to problem solving*, 7.

<sup>32</sup> Albert Einstein & Leopold Infeld, *The evolution of physics* (New York: Simon and Schuster, 1938), 92.

<sup>33</sup> In this context an analysis is a rational process of breaking a complex problem into constituent parts for study and understanding of the whole.

<sup>34</sup> Horst W.J. Rittel, and Melvin M. Weber, “Dilemmas in a General Theory of Planning,” *Policy Sciences* 4 (1973): 162.

<sup>35</sup> Jeff Conklin, Jeff. *Dialogue Mapping: Building Shared Understanding of Wicked Problems*. (Chicester, England: John Wiley & Sons, Ltd., 2006), 29.

<sup>36</sup> John F. Schmitt, *A Systemic Concept for Operational Design*, Marine Corps Combat Development Command, Concepts and Plan Division, Marine Corps Warfighting Lab concept paper, August 2006. p. 18. URL: [http://www.au.af.mil/au/awc/awcgate/usmc/mcwl\\_schmitt\\_op\\_design.pdf](http://www.au.af.mil/au/awc/awcgate/usmc/mcwl_schmitt_op_design.pdf)

<sup>37</sup> Headquarters U.S. Marine Corps, *Marine Corps Planning Process*, MCWP 5-1, (Washington, DC: Headquarters United States Marine Corps, 2010), 2-4.

<sup>38</sup> Ibid, 2-4.

<sup>39</sup> Ibid, 2-4.

<sup>40</sup> Ibid, 2-7.

<sup>41</sup> All interviewees conveyed that commanders are extremely busy. They often do not have the time to participate in the planning process. The staff briefs the commander with regards to the progress of the planning process on the basis of his availability.

<sup>42</sup> Examples of fixed templates are the Mission Analysis Worksheet and the Center of Gravity (COG) analysis.



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<sup>43</sup> Henry Mintzberg wrote in his book *The Rise and Fall of Strategic Planning* (1994) about the fallacies of contemporary planning methods used by many in business, industry, and government. The heart of his argument is that “analysis cannot substitute for synthesis” since much gets lost in a reductionist approach. Mintzberg urged loosening of formal processes. See Henry Mintzberg, *The Rise and Fall of Strategic Planning* (New York: The Free Press, 1994), 321.

<sup>44</sup> According to several interviewees the fixed templates only have utility when facing a well-structured problem for which the solution set is more or less known. Still many templates which are taught during Professional Military Education (PME) originate from the conventional warfare mindset (i.e. relative combat strength assessment).

<sup>45</sup> The mission statement is generally briefed at the end of the problem framing brief. Most of the times, the commander validates or refines the mission statement as a starting point for the next step of MCPP, course of action development.

<sup>46</sup> HQ USMC, *Marine Corps Planning Process*, K-21.

<sup>47</sup> See tactical mission tasks for the offense and defense in Headquarters, Department of the Army, *Offense and Defense*, volume 1, FM 3-90-1, March 2013.

<sup>48</sup> HQ USMC, *Marine Corps Planning Process*, 2-8.

<sup>49</sup> Convergent thinking emphasizes speed, accuracy, and logic and focuses on recognizing the familiar, reapplying techniques, and accumulating stored information. See Arthur Cropley, “In Praise of Convergent Thinking,” in *Creativity Research Journal*, volume 18, issue 3, (2006): 391-404.

<sup>50</sup> Scott G. Isaksen, K. Brian Dorval, and Donald J. Treffinger. *Creative approaches to problem solving: a framework for innovation and change*, Third edition (Los Angeles: SAGE Publications, Inc., 2011), xix.

<sup>51</sup> HQ USMC, *Marine Corps Planning Process*, 2-1 – 2-4.

<sup>52</sup> Marc A. Runco, *Creativity*, 14.

<sup>53</sup> Marc A. Runco, *Problem finding, problem solving, and creativity* (Norwood, NJ: Ablex Publishing Corporation, 1994), 11-13.

<sup>54</sup> Isaksen, Dorval, and Treffinger. *Creative approaches to problem solving*, 71.

<sup>55</sup> Headquarters U.S. Marine Corps, *Command and Control*, MCDP 6, (Washington, DC: Headquarters United States Marine Corps, 1996), 113.

<sup>56</sup> HQ USMC, *Marine Corps Planning Process*, 2-3.

<sup>57</sup> HQ USMC, *Command and Control*, 113.

<sup>58</sup> Theresa M. Amabile, “How to kill creativity,” *Harvard Business Review* 76, no. 5 (1998): 81-82.

<sup>59</sup> HQ USMC, *Marine Corps Planning Process*, 3-1.

<sup>60</sup> *Ibid*, 3-2 – 3-4.

<sup>61</sup> HQ USMC, *Planning*, 37.

<sup>62</sup> *Ibid*, 37.

<sup>63</sup> Horst W. Ritte and Melvin M. Webber, “Dilemmas in a General Theory of Planning,” in *Policy Sciences*, number 4 (1973), 161

<sup>64</sup> John F. Schmitt and Gary Klein, “How we Plan,” in *Marine Corps Gazette* (Oct 1999), 20.

<sup>65</sup> HQ USMC, *Marine Corps Planning Process*, 5-1

<sup>66</sup> *Ibid*, 5-2

<sup>67</sup> Gary A. Klein, “Strategies of Decision Making,” in *Military Review* (May, 1989), 63.

<sup>68</sup> Sawyer, *The Science of Human Innovation*, 132.

<sup>69</sup> Klein, “Strategies of Decision Making,” 56.

<sup>70</sup> Paul K. Van Riper, *An Introduction to System Theory and Decision-Making*, February 2015, p.11.

<sup>71</sup> Isaksen, Dorval, and Treffinger. *Creative approaches to problem solving*, 86.

<sup>72</sup> HQ USMC, *Planning*, 35-38.

<sup>73</sup> Isaksen, Dorval, and Treffinger. *Creative approaches to problem solving*, 85.

<sup>74</sup> Sawyer, *The Science of Human Innovation*, 240.

<sup>75</sup> *Ibid*, 245-246.

<sup>76</sup> During the idea generation, team members quickly jump to “proposing” solutions. They do not jump to these solutions because they think that they have the final solution, but because proposing solutions helps them to come to grips with the problem. These solutions are challenged by critical thinking. As a result, new solutions emerge. The process seems chaotic, but this is actually how the human brain works. Through discourse the many small solutions accumulate into an emergent novel solution.

<sup>77</sup> T.I. Lubart, Creativity, in *Thinking and problem solving*, ed. R.J. Sternberg (San Diego: Academic Press, 1994), 290.

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- <sup>78</sup> Sawyer, *The Science of Human Innovation*, 97.
- <sup>79</sup> Sawyer, *The Science of Human Innovation*, 237-240.
- <sup>80</sup> Isaksen, Dorval, and Treffinger. *Creative approaches to problem solving*, 37-38.
- <sup>81</sup> J.P. Guilford, *The nature of human intelligence* (New York: McGraw-Hill, 1967), 329.
- <sup>82</sup> Sawyer, *The Science of Human Innovation*, 132.
- <sup>83</sup> Rittel and Weber, "Dilemmas in a General Theory of Planning," 159.
- <sup>84</sup> Schmitt and Klein argue in their article *How to Plan* to wargame "the single [CONOPS] against several enemy COAs," instead of wargaming several COAs against the most likely enemy COA. They argue that wargaming serves less as a validation. Wargaming is more a rehearsal and "is a chance to work through different possible futures." This approach to wargaming will help commanders, planners, but also subordinate commanders to gain an understanding about the uncertainty involved when facing a wicked problem. Schmitt's and Klein's point of view reinforces the argument that there is no reason to develop and compare several COAs. See John Schmitt and Gary Klein, "How we Plan," in *Marine Corps Gazette* (Oct 1999): 18-26.
- <sup>85</sup> Gerald Steiner, "The Concept of Open Creativity: Collaborative Creative Problem Solving for Innovation Generation – A Systems Approach," in *Journal of Business and Management*, volume 15, no. 1 (2009): 5-33. URL: <http://www.chapman.edu/business/files/journals-and-essays/jbm-editions/jbm-vol-15-01.pdf>
- <sup>86</sup> An air defense system and fighter aircraft are complicated systems. They are made up of many parts that behave in a linear fashion. Complicated problems deal with such type of systems.
- <sup>87</sup> Gerald Steiner, "The Concept of Open Creativity," 5-33.
- <sup>88</sup> Paul K. Van Riper, Lieutenant General (Ret.), remark during system theory seminar, US Marine Corps University, Command and Staff College, Quantico, January 29, 2015.
- <sup>89</sup> General Naveh demanded that commanders and planners have to answer the question, "What is the problem?" before attempting to resolve it. See Shimon Naveh, *In Pursuit of Military Excellence: The Evolution of Operational Theory* (London: Frank Cass Publishers, 1997).
- <sup>90</sup> United States Joint Forces Command, *Design in Military Operations, A Primer for Joint Warfighters*, Pamphlet 10 (Washington, DC: United States Joint Forces Command, September 20, 2010), 2.
- <sup>91</sup> Schmitt, *A Systemic Concept for Operational Design*, 8.
- <sup>92</sup> *Ibid*, 3.
- <sup>93</sup> According to Lieutenant General Van Riper (Ret.) the Services began to examine the novel approach for designing campaigns in 2004. Subsequently, Design was evaluated and refined in a series of experiments, studies, and articles. Design was first incorporated in Joint and Service doctrinal publications in 2010. See Van Riper, *An Introduction to System Theory and Decision-Making*, 10-12.
- <sup>94</sup> Van Riper, *An Introduction to System Theory and Decision-Making*, 12.
- <sup>95</sup> Mel Rhodes, "An analysis of creativity," in *Phi Delta Kappan*, volume 42, number 7 (1961): 305-310.
- <sup>96</sup> "Planning is a fundamental responsibility of command. The commander must not merely participate in planning, he must drive the process. His personal involvement and guidance are key to planning." See HQ USMC, *Marine Corps Planning Process*, 1-5.
- <sup>97</sup> Theresa M. Amabile, "How to kill creativity," in *Harvard Business Review* 76, no. 5 (1998): 79.
- <sup>98</sup> David Burkus, "How Hierarchies Kill Creativity," in *The Creativity Post* (June 26, 2012). URL: [http://www.creativitypost.com/business/how\\_hierarchies\\_kill\\_creativity](http://www.creativitypost.com/business/how_hierarchies_kill_creativity)
- <sup>99</sup> Runco, *Creativity*, 404-405.
- <sup>100</sup> Marc A. Runco, "Creativity," in *Annual Review of Psychology*, number 55 (2004), 677.
- <sup>101</sup> Sawyer, *The Science of Human Innovation*, 246.
- <sup>102</sup> Isaksen, Dorval, and Treffinger. *Creative approaches to problem solving*, 18.
- <sup>103</sup> HQ USMC, *Warfighting*, 72-74.
- <sup>104</sup> Sawyer, *The Science of Human Innovation*, 235.
- <sup>105</sup> "Thomas Edison was prolific in his experiments. His development of the electric light took over 9,000 experiments and that of the storage cell around 50,000. See Paul Sloane, *The Innovative Leader – How to inspire your team and drive creativity* (London, UK: Kogan Page, 2007), 70-71.
- <sup>106</sup> Sidney J. Parnes, "Effects of extended effort in creative problem solving," in *Journal of Educational Psychology*, 52 (1961): 117-122.
- <sup>107</sup> Sun Tzu, *The Art of War*, ed. and trans. by Samuel B. Griffith (New York: Oxford University, 1971), 84
- <sup>108</sup> Sawyer, *The Science of Human Innovation*, 234.
- <sup>109</sup> *Ibid*, 234.

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- <sup>110</sup> Noteworthy to mention is that the belief that outsiders are more creative, is one of the myths in the realm of creativity. People who have internalized the domain are generally more creative in their domain. “The exceptional creators who make radical contributions that advance a field have often had experience and training in different areas before they began to study that new area.” See Sawyer, *The Science of Human Innovation*, 407.
- <sup>111</sup> Jehn, et al., conclude that higher group diversity leads to higher levels of intra-group conflict. See K.A. Jehn, G.B. Northcraft, and M.A. Neale, “Why difference makes a difference: A field study of diversity, conflict, and performance in work groups,” in *Administrative Science Quarterly*, number 44 (1999): 741-763.
- Knights, et al., conclude that teams with greater diversity of functional backgrounds undergo greater interactive struggles and experience difficulty in reaching consensus. See D. Knight, C.L. Pearce, K.G. Smith, J.D. Olian, H.P. Sims, K.A. Smith, et al, “Top management team diversity, group process, and strategic consensus,” in *Strategic Management Journal*, number 20 (1999): 445-465.
- <sup>112</sup> Sawyer, *The Science of Human Innovation*, 234.
- <sup>113</sup> Bruce W. Tuckman, “Developmental Sequence in Small Groups,” in *Psychological Bulletin*, (63)6 (1965): 384-399.
- <sup>114</sup> HQ USMC, *Warfighting*, 32.
- <sup>115</sup> H. Gardner, *Creating minds* (New York: Basic Books, 1993).
- <sup>116</sup> Sawyer, *The Science of Human Innovation*, 94.
- <sup>117</sup> John F. Schmitt and Gary Klein, “How we Plan,” 26.
- <sup>118</sup> Sawyer, *The Science of Human Innovation*, 407.
- <sup>119</sup> Sloane, *The Innovative Leader*, 5.
- <sup>120</sup> G.S. van der Vegt, and J.S. Bunderson, “Learning and performance in multidisciplinary teams: The importance of collective team identification,” in *Academy of Management Journal*, number 48(3) (2005): 532-547.
- <sup>121</sup> Sir William Slim, “Higher Command in War,” in *Military Review*, volume 70, number 5 (May 1990): 10-21.
- <sup>122</sup> T. Osborne, “Against “Creativity”: A philistine rant,” in *Economy and Society*, 32(4) (2003): 508.
- <sup>123</sup> Carl H. Builder, Steven C. Bankes and Richard Nordin, *Command Concepts: A Theory Derived from the Practice of Command and Control* (Washington, DC: Published by RAND, 1999), 73-88.
- <sup>124</sup> G. Steiner, Ein Modell für ein Integriertes Kreativitätsmanagement. Mit einer empirischen Studie zum Industrial Design in Österreich und Bayern. Doctoral thesis. University of Graz.
- <sup>125</sup> Rhodes, “An analysis of creativity,” 305-310.
- <sup>126</sup> HQ USMC, *Marine Corps Planning Process*, 2-1.
- <sup>127</sup> *Ibid*, 3-1.
- <sup>128</sup> *Ibid*, 4-1.
- <sup>129</sup> *Ibid*, 5-1.
- <sup>130</sup> *Ibid*, 6-1.
- <sup>131</sup> *Ibid*, 7-1.
- <sup>132</sup> Sawyer, *The Science of Human Innovation*, 88-90.
- <sup>133</sup> Isaksen, Dorval, and Treffinger. *Creative approaches to problem solving*, 32.