CMP 402 Theoretical Perspectives

A Comparison of Action Research and Scrum

Submitted in partial fulfillment of the requirements for the degree of Master of Arts in Creative Media Practice.

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Date of submission:	September 2011
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Word count:	4964

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1. Introduction

Creative media encompasses interrelated art forms like music, design, cinema and animation (UNESCO, 2005). A study of these art forms could be focused on different fields: It could be set on stylistic and aesthetic attributes, on its practitioner's sociological behavior or on the productive workflow. A research method or methodology [RM] can help gain new knowledge in these topic areas: An experiment may increase knowledge on a group's stylistic preference of a computer interface. An observation may increase knowledge on the relationship between an audio engineer and a musician. A case study may increase knowledge on the production process of a television commercial. In this paper I focus on productivity within the creative media industry [CMI]. After analyzing the CMI, some of its RMs, and some of its theories, I will discuss the two approaches Action Research [AR] and Scrum. The first, a RM for improving practice, and the second, a framework for developing products. A comparison of the two will reveal similarities.

2. Creative Media Research Methods

2.1. Defining the Scope of the Creative Media Industry

Before taking a look at the various RMs that are being applied in the CMI, I will suggest a definition of the industry itself.

Business and labor are stated within the definition of the term "industry" (Webster, 1913). Therefore, using a people-centric approach, one could use the term as a container of job titles. For instance, the term "agricultural industry" could define the boundaries around jobs such as shepherd, orange picker, crop duster pilot and so forth.

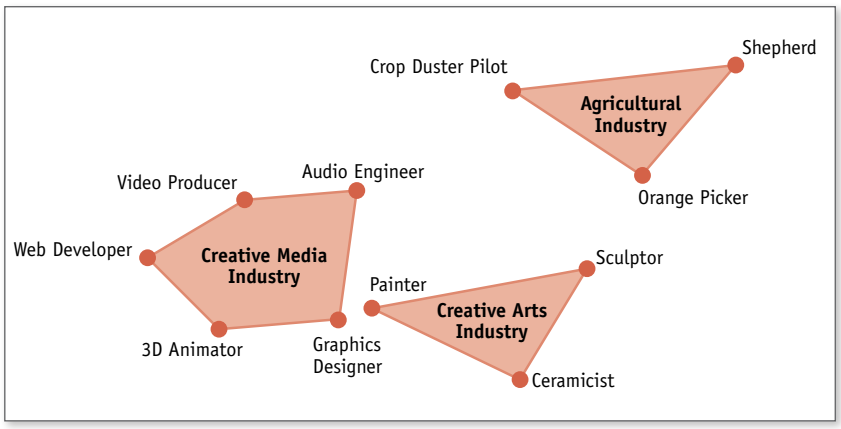


Figure 1: Using job titles to define the scope of an industry.

Being a type of creative industry, creative media has its roots in the creative arts and the cultural industries (Hartley, 2005, p. 5). These industries are defined through the experience of the beholder. Paul Levinson (2009, p. 13), author of the book *Digital McLuhan*, talks about experiencing a technology as an act of pleasure, like enjoying a painting. The actual trans-

formation from these sister industries and their technologies, such as the mentioned painting, occurred during the 1990s, with the introduction of new technology such as the multimedia-capable computer (Hartley, 2005, p. 5). This leads me to the proposition, that creative media differs from other creative industries through its use of interactive technology.

Using the two previously stated conditions —that an industry can be a category of job titles, and the use of interactive technology for creativity— I can define which people belong to the CMI. A painter, while creative, does not fit the conditions, because of the absence of interactive technology. A banker, while using interactive technology, does not fit the conditions due to lack of creativity (in an artistic sense). A graphics designer meets both conditions.

While this is one of many ways to define the scope of the CMI (a similar alternative would have been to define the industry's scope using its output rather that its people), I will take the described approach for analyzing research methods in the next section.

2.2. Defining Criteria for Creative Media Research Methods

Briony Oates, author of the book *Researching Information Systems and Computing*, defines research using three criteria.

> *"Research is the creation of new knowledge, using an appropriate process, to the satisfaction of the users of the research."*
> (Oates, 2006, p. 7)

I will partially adapt this definition in order to test a RM for its appropriateness within the CMI:

1. **It should increase knowledge.**
   The goal of research is to create and communicate new knowledge (University of Ballarat, 2010) (Blaxter, Hughes & Tight, 2001, p. 2) (Oates, 2006, p. 7) or, in other terms, answer a question (Booth, Colomb & Williams, 2003, p. 10).

2. **It must be a method or methodology.**
   A method is a "*disposition of materials according to a plan or design*" (Unsworth, 2005) or a "*particular procedure for accomplishing or approaching something*" (Oxford Dictionary, 2011). A methodology is a "*set of guidelines which stimulate the intellectual process of analysis*" (Wilson, 2001, p. 6). Based on Wilson's comparison of the two terms, where he states that a method is more prescriptive than a methodology (Wilson, 2001, p. 6), I will consider both definitions in order to broaden the scope of this particular criterion; Similar to Oates' use of the term *process* in the above quote.

3. **It must be within the CMI.**
   Taking a people-centric approach for defining the scope of the CMI in the previous section, I now have a target audience for various RMs.

There are two differences from Oates' statement. I removed the 'appropriate' property of the process, since this is the purpose of my criteria, and I added a more precise definition of 'users of the research'. Combining the adapted criteria back into a sentence, I am now able to ask specific questions. For example: "By applying which RM can I gain new knowledge that could potentially benefit a game developer?"

I will now introduce two research approaches, in order to demonstrate the application of these criteria.

2.3. Applying Criteria

Collective Intelligence from Innovation Communities

According to the *Handbook of Collective Intelligence*, collective intelligence is defined as "*Groups of individuals doing things collectively that seem intelligent*" (MIT, 2010). The concept of Collective Intelligence has existed since hunter-gatherer societies, yet has only gained popularity with the event of web technologies such as blogs, forums and wikis (MIT, 2010).

Larry Sanger describes these groups as "Innovation Communities" with his contribution to the book *Open Sources 2.0*; In these communities, discussions and debates help form new ideas:

> *"Innovation Communities provide social structures and, occasionally, tools that facilitate communication and interaction among users and the creation and diffusion of innovations."*
> (DiBona et al., 2006, p. 343)

This method would fulfill my criteria if applied to a topic area within the CMI. For example, user groups formed around the usage of Adobe Software (Adobe Groups, 2011). Innovations (first criterion) collected within a community via the web and in gatherings (second criterion) could potentially benefit people within the CMI (third criterion).

Soft Systems Methodology

Soft Systems Methodology [SSM] is "*an organized way for tackling messy situations in the real world*". (Checkland & Scholes, 1999, p. 1). SSM situates itself at the 'soft' end of the spectrum of real-world problem solving, where it is not quite clear what the exact problem is (Wilson, 2001, p. 6). SSM can be characterized by the steps in figure two:

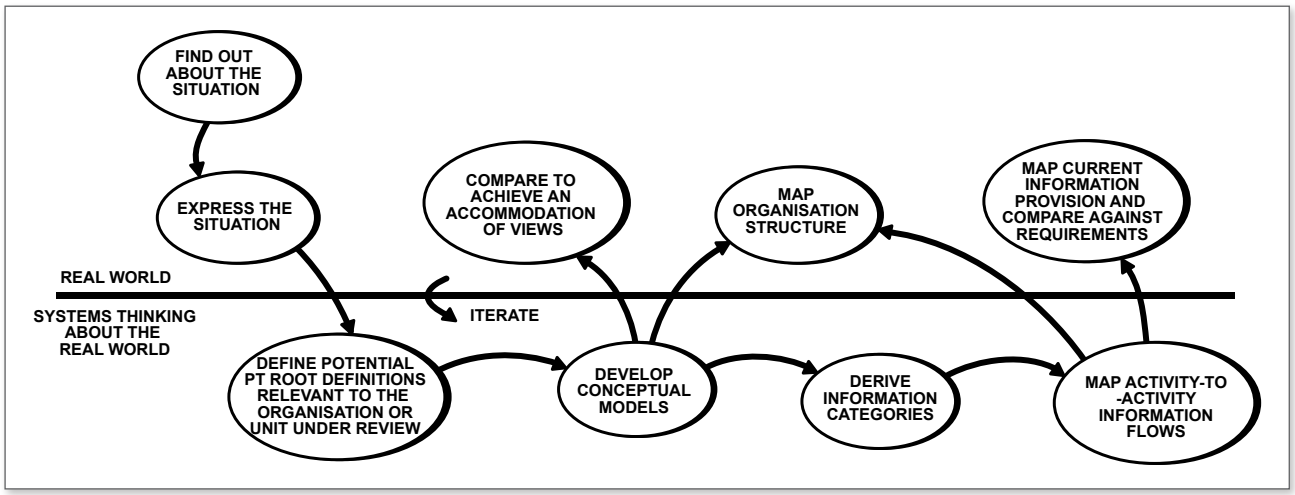


Figure 2: A Wilson methodology for information requirements analysis and information audit. (Wilson, 2001, p. 8)

With these steps, SSM contains a process (second criterion). New knowledge is created with the intention to solve a problem (first criterion). Fulfilling the third criterion would mean to apply the steps to a specific problem within the CMI. For instance, SSM was used to analyze the design of social software (Bouman et. al, 2008).

2.4. Data Collection Methods

My first criterion, increasing knowledge, is the objective of research (see section 2.2). A further criterion could be added, specifying *how* data is collected from which new knowledge can be gained. Blaxter, Hughes and Tight (2001, p. 153), the authors of *How to Research*, state that *"all research involves the collection and analysis of data"* and describe four main techniques: documents, interviews, observation and questionnaires (2001, p. 165). RMs can be grouped by the data collection methods they employ. I will now introduce a RM to display how this criterion can be defined.

Data Mining

In their book *Data Mining Concepts and Techniques*, Jiawei Han and Micheline Kamber (2006, p. 5), define Data Mining as the act of extracting knowledge from large amounts of data. This is a reverse to the typical approach, where a researcher gathers new data to prove or disprove a hypothesis (Blaxter, Hughes & Tight, 2001, p. 7) (Cryer, 2000, p. 68). With Data Mining, the researcher evaluates existing data to find patterns (Han & Kamber, 2006, p. 8). Interpreting information from the database of an online game, for instance, could potentially benefit game designers in improving gameplay. In this example, the collection of data during gameplay is a form of observation. Data Mining could belong to a group of RMs that employ observation as a data collection method.

2.5. Findings

The attributes I extracted from Oates' statement in section 2.2 allow for a range of different RMs that benefit the CMI. Further criteria, like the employed data gathering techniques in section 2.4, can be used to group these RMs.

3. Creative Media Theory

3.1. Defining Criteria for Creative Media Theories

After my definition of research in the CMI in the previous section, I will now do the same for creative media theory. Two criteria can be extracted from the term:

1. **It must be a theory or a framework of ideas.**
   A theory is "*the general or abstract principles of a body of fact, a science, or an art <music theory>*" (Merriam-Webster, n.d. a).

2. **It must relate to art that is driven by interactive technology.**
   In section 2.1, I made the proposition that creative media is an art form that differs through its use of interactive technology. This way, creative media could be perceived as an output, such as a website or a podcast.

In the introduction, I stated that I would narrow my focus in creative media theory to the field of productivity. Although not generally applicable, this will be an additional third criterion.

3. **It should increase productivity.**
   Productivity is the "*effectiveness in bringing about*" (Merriam-Webster, n.d. b)

Putting the criteria back into a sentence, I can again ask a specific question. For example: "Based on which set of principals can I create a computer game?". I will now introduce two theories in order to demonstrate the application of these criteria.

3.2. Applying Criteria

Agile Software Development

"Agile" is a collection of values and principals for software development (Shore & Warden, 2008, p. 9). The inventors of Agile expressed this way of thinking about software development through a manifesto (Beck et al., 2001 a), in which they state the following core concepts:

> *"Individuals and interactions over processes and tools*
> *Working software over comprehensive documentation*
> *Customer collaboration over contract negotiation*
> *Responding to change over following a plan"*
> (Beck et al., 2001 a)

Multiple methods have been created based on this development philosophy, most notably Extreme Programming and Scrum (Shore & Warden, 2008, p. 9).

Agile development is a collection of principals (second criterion) that focuses on productivity (third criterion). The first criterion applies if software can be considered art. Even though software development would typically relate to the information technology field, rather than the creative media field, I argue that many software products, such as computer games or data visualizations, could be considered a work of art.

The 100 Lenses of Game Design

Jesse Schell, a professor at Carnegie Mellon University, wrote an extensive book on game design, where he expresses his theories with the metaphorical use of lenses. The theories apply to many different attributes of game design. For instance on sociological attributes in "The Lens of the Team" (Schell, 2008, p. 380), or "The Lens of Pleasure" (Schell, 2008, p. 112). Many of Schell's theories also focus on productivity. For example:

The Lens of the Problem Statement:

Schell (2008, p. 62) encourages a game designer to think of a game as "*a solution to a problem*". Using a problem statement helps define constraints and goals that make the game design clearer (Schell, 2008, p. 62).

The Lens of Risk Mitigation:

Schell (2008, p. 86) states a game designer should seriously consider "*the things that can go horribly wrong*". He also suggests prototyping and looping as ways to reduce risk (2008, p. 86).

An entire framework of theories is described throughout Schell's book. The previous two theories (first criterion) aid in the creation (third criterion) of games (second criterion).

3.3. Findings

The criteria I defined in sections two and three can be arranged by objective, approach and scope:

	Criteria for research in the industry	Criteria for creative media theories
Objective	It should increase knowledge.	It should increase productivity.*
Approach	It must be a method or methodology.	It must be a theory or a framework of ideas.
Scope	It must be within the CMI.	It must relate to art that is driven by interactive technology.

* Productivity is not a general criterion for creative media theories.

4. Creative Media Productivity Methods

4.1. Defining Criteria for Creative Media Productivity Methods

By choosing parts from the objective, approach and scope grid from section 3.3, I can define a new set of criteria to search for creative media methods that focus on productivity.

1. **It should increase productivity.**
2. **It must be a method or methodology.**
3. **It must relate to art that is driven by interactive technology.**

I will now briefly demonstrate how this mix of criteria would apply.

4.2. Applying Criteria

A Spiral Model of Software Development

In his book on game design, Schell (2008, p. 82) suggests the use of the "Spiral Model of Software Development", as defined by Barry Boehm in 1986, in order to reduce risk. This spiral model consists of the phases: design, assess risks, build prototypes, test, and reflect (Boehm, 1986, p. 64, cited in Schell, 2008, p. 83).

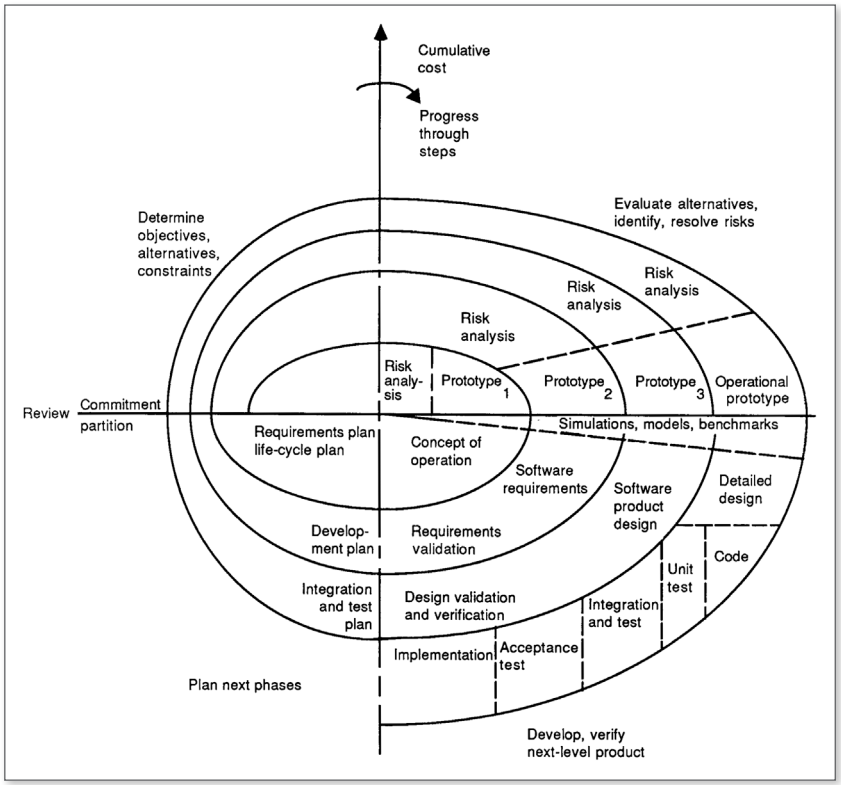


Figure 8: Spiral model of the software process (Boehm 1988, p. 64).

Boehm's model satisfies the criteria in that he presents a method (criterion 2) that potentially optimizes the practice (criterion 1) of creating software (criterion 3). The same argument applies from section 3.2: that certain types of software can be considered works of art.

4.3. Findings

Going beyond the comparison of theories and methods amongst each other, I think they can be conceptually interrelated. For instance, Schell's "Lens of Mitigation" is partially derived from Boehm's "Spiral of Software Development" (Schell, 2008, p. 82). To further discuss this point, I will compare AR with Scrum. I will now analyze the two, in order to display points for comparison.

5. Analysis of Action Research

5.1. Definition

AR is a RM for solving problems (Oates, 2006, p. 154) (Griffiths, 1998, p. 21) and includes an iterative process with multiple steps. Although variable, these steps are based on the process of plan, act, and reflect (Blaxter, Hughes & Tight, 2001, p. 70) (Oates, 2006, p. 157). The origins of AR are unclear; A description made by Kurt Lewin in the 1940s is credited as the first (Masters, 1995, p. 1). Lewin described AR as "*proceeding in a spiral of steps, each of which is composed of planning, action and the evaluation of the result of action*" (Kemmis & McTaggert, 1990, p. 8, cited in Masters, 1995, p. 1).

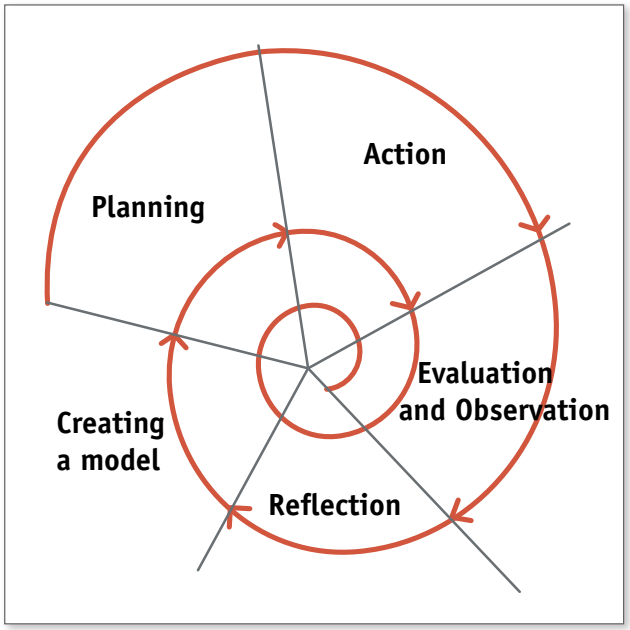


Figure 3: An Action Research cycle (Adapted from: Routio 2005)

5.2. Overview

Peter Checkland, an influential action researcher and creator of SSM, suggests researchers should conceptualize AR using the FMA model, where "*A particular set of ideas, F, are used in a methodology, M, to investigate some area of investigation, A.*" (Checkland, 1991, p. 398, cited in Kock et. al, 2007, p. 145).

Framework: A framework of ideas acting as the theory base in an AR project;

Methodology: A problem solving methodology that embodies the theory base;

Area: A real world problem situation
(Oates, 2006, p. 156).

The framework helps action researchers define how knowledge will be created and expressed (Oates, 2006, p. 156).

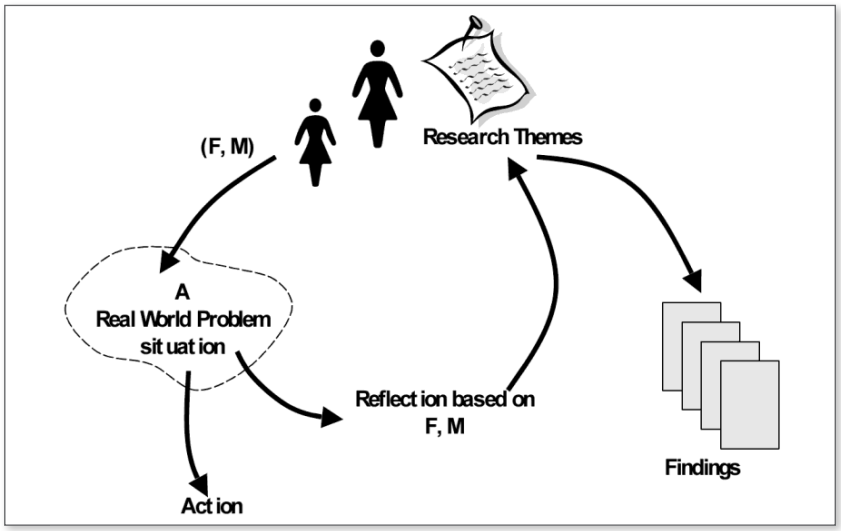


Figure 4: An Action Research cycle using the FMA framework (Checkland, 1991, cited in Kock, 2007)

As an emergent research strategy, AR has leaned towards becoming participatory in recent years (Oates, 2006, p. 161). Reason and Bradbury describe this 'new' action research as a *"participatory, democratic process"* (Reason & Bradbury, 2001, p. 1). Participation is in alignment with the objective of AR—increasing knowledge on how to improve practice—since the researcher may be part of the situation in need of improvement. A negative aspect of participation is that the researcher may be too close to the subject matter and prone to self-delusion (Oates, 2006, p. 160). It is, therefore, recommended for an action researcher to report the efforts of avoiding self-delusion (Oates, 2006, p. 161).

5.3. *Usage*

I will now describe how I intend to apply AR in my upcoming research project titled: "A Conceptual Model for Developing Publisher-Independent Cross-Platform Casual Games for the Flash Platform" (Zanotti-Schudel, 2011, p. 3). The problem situation is that independent casual game developers, including myself, often need to develop separate versions of their games for separate platforms ranging from mobile devices to gaming consoles. The previously described FMA framework will be applied as follows:

Framework: Scrum (see section 5);

Methodology: SSM (see section 2.3);

Area: Publisher-independent cross-platform game development.

The research takes place within the community of independent game developers. The data collection methods will be qualitative in nature:

Reflection: I will use SSM according to Wilson, to create a conceptual model. The research is targeting the 'soft' side of the problem area: my understanding of how people create digital games that are played in different circumstances. The 'hard' side of the problem area is being addressed by the Flash Platform engineers at Adobe: they provide the technology to run games on different devices.

Interviews: The intended outcome of the interviews, in which my own process will be discussed, is to find similarities and alternatives from the process of the interviewee.

AR in combination with SSM provides a clear way of thinking about my research problem. It fits the criteria in section two, as it is a method that helps me increase knowledge on how to develop games.

6. Analysis of Scrum

6.1. Definition

Based on a term used in rugby, where a team *"tries to go the distance as a unit, passing the ball back and forth"* (Takeuchi & Nonaka, 1986, p. 1), Scrum is a *"framework for developing and sustaining complex products"* (Schwaber & Sutherland, 2011, p. 3). The term was first used in this manner in 1986 by Takeuchi and Nonaka and has since gained popularity for optimizing business processes (West, Gilpin & D'Silva, 2009), including the development of software (Kieth, 2010).

Figure 5: A scrum in rugby (Ephram 2008)

Since the mid nineties, Ken Schwaber and Kieth Sutherland, both active within the computer software industry, have been collecting and contributing new advancements to the Scrum framework:

> *"Scrum is probably a collection of best ideas of what a number of people in our profession have come up with over the years."*
> (Schwaber, 2006)

6.2. Overview

The key concepts of the framework are organized as artifacts, roles, events, and rules (Schwaber & Sutherland, 2011, p. 3).

Artifacts

Backlog: A list of features, ordered by priority (Kieth, 2010, p. 41). It is a bullet-point style description of what the product should become. Updating the backlog is its own separate process: *"The Product Backlog evolves as the product and the environment in which it will be used evolves."* (Schwaber & Sutherland, 2011, p. 12)

Roles

There is a distinction between customer and production roles, allowing a clear definition of each party's needs (Keith, 2010, p. 44).

Development Team: All professionals required to complete the project goals (Keith, 2010, p. 46).

Scrum Master: In charge of overseeing the Scrum process (Keith, 2010, p. 46).

Product Owner: In charge of maximizing the product's return of investment (Keith, 2010, p. 51) and managing the backlog (Schwaber & Sutherland, 2011, p. 5).

Stakeholders: Usually the financiers of the project. They are in charge of defining product features (Keith, 2010, p. 54).

Events

Scrum uses the planning techniques of timeboxing and events for determining when certain phases begin and end (Schwaber, 2006).

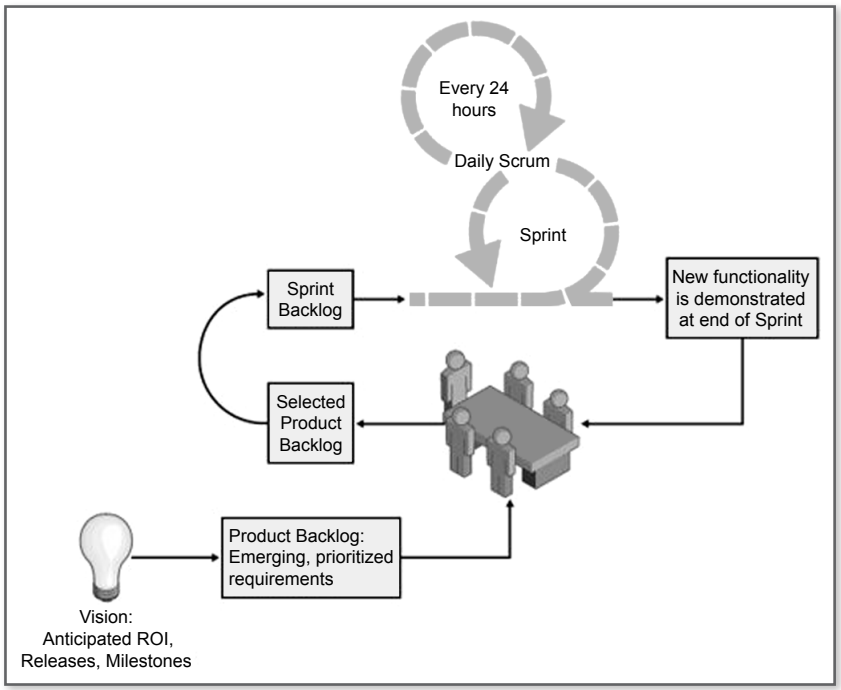


Figure 6: Scrum process overview (Schwaber, 2009, p. 9)

Sprints: *"A Scrum-developed project makes progress in sprints"* (Keith, 2010, p. 42). During a predefined time-period, the team produces a feature from the backlog. At the end of a sprint, the team shows the new feature to the project's stakeholders, the backlog is updated and a new sprint is commenced.

Releases: A release happens after a set of sprints. At that point, the product should be in a near-shippable state, meaning that it should be fully functional with the current features (Kieth, 2010, p. 43).

Project members meet at predetermined intervals. Each of the following meetings have clear goals:

Sprint Planning: Before commencing a sprint, the team meets to define what will be delivered upon completion and how the workload will be handled (Schwaber & Sutherland, 2011, p. 9).

Daily Scrum: In daily meetings, the team briefly synchronizes their efforts and report their progress to the scrum master (Kieth, 2010, p. 74).

Sprint Review: On the last day of a sprint, the team meets with the stakeholders to demonstrate the new functionality of the product (Kieth, 2010, p. 76).

Sprint Retrospective: After a sprint the team reflects on their production process (Kieth, 2010, p. 79).

6.3. Usage

In my upcoming research project, I wish to improve the practice of creating cross-platform casual games. The large amount of documentation and debates I have found during my investigations of Scrum, give me the impression that the framework is accepted by the software development community. The concepts will thus serve as a basis for the productive elements of my conceptual model.

7. Comparison of Action Research and Scrum

The first difference that I would like to address, is that AR is considered a methodology and Scrum is considered a framework. To avoid an apples-versus-oranges-comparison, I must be more precise: I compare some of the concepts behind AR methodology to some of the concepts within the Scrum framework. I wish to find alternative applications of AR and Scrum concepts, i.e.: How one can benefit from the other, and vice versa.

7.1. Action

Both AR and Scrum have specific phases for taking action. During this action phase, no other process takes place within the team. For instance, there is no simultaneous observation process. Schwaber states that a Scrum team should not be disturbed or overworked, in order to keep productivity up (Schwaber, 2006). Furthermore, the action phase in both AR and Scrum is halted in order for new phases, like reflection, to take place.

7.2. Reflection

The reflective nature of Scrum happens during events (e.g. Daily Scrum or Sprint Retrospective), in which the team discusses their work progress.

> *"[…] each event in Scrum is an opportunity to inspect and adapt something."* (Schwaber & Sutherland, 2011, p. 8)

This approach of improving the process with peers is the same as the 'Peer review from Collective Intelligence' RM I introduced in section two:

> *"At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly."*
> (Beck et al., 2001)

With this similarity to peer review (see section 2.3), the question arises if Scrum events could be considered a RM within the CMI. Using my three criteria for defining research within the CMI, the answer is yes: During events, the development team (third criterion) reflects (second criterion) on its process to improve practice (first criterion). Schwaber and Sutherland mention the generation of new knowledge in their definition of Scrum theory:

> *"Scrum is founded on empirical process control theory, or empiricism. Empiricism asserts that knowledge comes from experience and making decisions based on what is known."*
> (Schwaber & Sutherland, 2011, p. 4)

In her explanation of AR, Oates (2006, p. 161) encourages the researcher to address self-delusion and group-think. As a counter measure, she suggests the use of a "devil's advocate" procedure in which "*one or more group members regularly try to show that a theory does not apply*" (Oates, 2006, p. 161). The Scrum framework, as defined by Schwaber and Sutherland, does

not address this issue. It is stated, however, that a team needs to organize itself (Schwaber & Sutherland, 2011, p. 5).

7.3. Iteration

Iteration is a common concept among many of the RMs and theories I have introduced. Schell's "Lens of Risk Mitigation" suggests looping (see section 3.2) and Boehm's model for software development is constructed as a spiral (see section 11.2). While all of these approaches, including AR, are usually based on a single cycle, Scrum is iterative at multiple levels (such as the release and sprint cycles).

> *"Scrum employs an iterative, incremental approach to optimize predictability and control risk."* (Schwaber & Sutherland, 2011, p. 4)

The match here, is that both AR and Scrum use the outcomes of a previous cycle as the input for a new cycle.

7.4. Participation

In AR, the people in the situation are participants, as Oates states:

> *"People living and working in the situation under study are active participants in the research."* (Oates, 2006, p. 155)

This is the same with Scrum, where the team members participate in optimizing their own work practice.

In the case of participatory AR, as described in section 3.2, the researcher may also be included in this group. Similar to the action researcher, the scrum master is the person in charge of overseeing the process and may also be a part of the production team (see section 6.2). However, the scrum master, unlike the action researcher, is not directly in charge with optimizing the production process or sharing new knowledge beyond the production team.

7.5. Knowledge Distribution

As Margaret Riel, author of *Understanding Action Research*, states, AR promotes the academic sharing of knowledge:

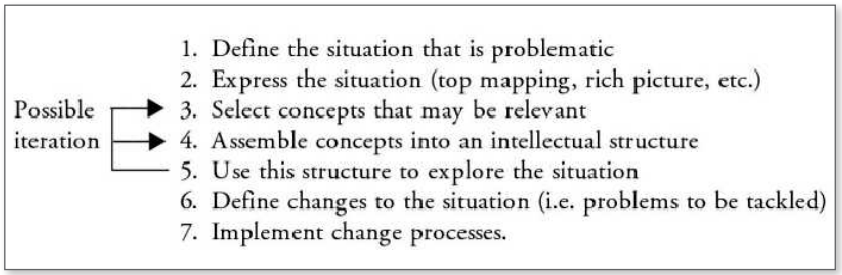
> *"At the scholarly level, the action researcher produces validated findings and assumes a responsibility to share these findings with those in their setting and with the larger research community."*
> (Riel, 2010)

The Scrum framework, as defined by Schwaber and Sutherland, does not have an event for sharing knowledge beyond the team and stakeholders.

7.6. Problem Definition

Scrum shares a similarity with AR (in conjunction with SSM) in that it seeks to solve 'messy problem situations'. It does so by expressing the problem in a backlog. A difference is that the Wilson approach does not readdress changes to the problem situation until the seven stages are completed:

Figure 7: The stages of SSM (Wilson 2001 p. 7)



The Scrum framework is based on the ideas of Agile Development (see section 3.2), and is expressed as a way to rapidly and efficiently adapt to changes (see section 6). Processes are put into place to constantly address change. AR may address situations of greater complexity than a backlog and may require abstraction. Still, I argue that even abstract problem situations may change and that the possibility may need to be addressed more frequently.

8. Conclusions

Upon analyzing methods and theories throughout this paper, I found that they sometimes share similar concepts. With all the similarities between AR and Scrum, one might wonder if one approach influenced the creation of the other. Historically, Scrum was first defined in 1986 and the framework was created in the 1990s (see section 6). AR dates back to the 1940s (see section 5). Since both approaches are constantly evolving through the contributions of academics and professionals, it can be assumed that some concepts are derivatives of each other.

Depending on the situation, a practitioner of either AR or Scrum may benefit by replacing specific elements. As a conclusion in their *Scrum Handbook*, Schwaber and Sutherland welcome the extension of the framework with the following statement:

> *"Scrum exists only in its entirety and functions well as a container for other techniques, methodologies, and practices."*
> (Schwaber & Sutherland, 2011, p. 15)

I will now list some ways for adapting AR and Scrum, that could potentially benefit a practitioner in a specific problem situation. The adaptations are derived from the respective approach.

8.1. Extending Action Research with Scrum Practices

Releases:

In Scrum, there should be a fully functional version of the product at the end of a release cycle (see section 6.2). Applying this to AR, the researcher could aim to have a near feature complete version of the research paper by the end of each AR cycle and reiterate as long as time permits. If needed, a stakeholder could receive immediate results based on the researcher's current level of knowledge. For example, a research paper with two completed AR cycles, rather than a draft version.

Agility:

A real-world problem situation may change during the course of an AR cycle. For example, new team members or technologies may be introduced. The researcher may avoid redundant improvements to a practice by continuously updating the definition of the problem situation. Like a Scrum backlog, the definition of the problem situation could be decoupled from the other processes and continuously be updated by stakeholders whenever new data is received.

8.2. Extending Scrum with Action Research Practices

Knowledge distribution:

In AR, achieving both the practical and the academic outcomes are considered ideal (see section 7.5). In Scrum, sharing the optimizations to the production process beyond the team could be an additional task for the scrum master. Similar to the backlog, documentation of the process could be treated as an artifact.

Avoiding self-delusion and group-think:

Action researchers are expected to address the handling of personal bias. The "devil's advocate procedure", known from AR (see section 7.2), can be applied to Scrum events such as the sprint retrospective. One or more team members taking the role of a devil's advocate can constantly try to show that a theory does not apply and possibly uncover any lack of evidence.

8.3. Benefits to the Creative Media Industry

In the introduction, I stated that there are different fields of study in creative media theory and that I will focus on productivity. The previous comparisons resulted in possible ways to extend a methodology and a framework, in order to improve a workflow. The benefit of having improved workflows in the CMI is the potential to increase efficiency. An increase in efficiency, in turn, could further lead to things like a sustainable work velocity, better products, and satisfying carriers.

8.4. Personal Insights

In alignment with what Wilson stresses in his book on SSM, I have learned that it is crucial to start the intellectual process of research by first thinking about thinking:

> *"Thinking about how to think about a problematic situation can produce the most powerful and defensible application of the range of intellectual tools available to an analyst."* (Wilson, 2001, p. 8)

By analyzing different approaches throughout this paper, I have deepened my understanding of what constitutes an appropriate methodology and a relevant theory for my upcoming research project.

The objective, approach and scope grid of criteria I have created (see section 3.3) serves as a tool to distinguish between various methods and theories.

By making a comparison of AR and Scrum, I believe I have made extensive investigations in both subject areas. This has solidified my choices to use AR with SSM to create a conceptual model, and to base my practice on the theories of the Scrum framework.

9. Abbreviations

AR Action Research
CMI Creative Media Industry
FMA Framework, Methodology, Area
RM Research Method or Methodology
RMs Research Methods or Methodologies
SSM Soft Systems Methodology

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12. Appendixes

12.1. Extension to Section 2.3

This example was made to further demonstrate my criteria for research in the CMI.

1. **It should increase knowledge.**
2. **It must be a method or methodology.**
3. **It must be within the CMI.**

Virtual Ethnography

Ethnography is "*a description of peoples or cultures*" (Oates 2006 p. 173). In order to do this, the researcher gathers data by participating in people's lives (Atkinson & Hammersley, 2007, p. 3). The researcher collects data based on feel and experience (Oates, 2006, p. 174) and is influenced by the culture being studied (Oates, 2006, p. 175). Virtual Ethnography, as a subset of Ethnography, happens online and is a tool to "*develop an enriched sense of meanings of the technology and the cultures which enable it and are enabled by it*" (Hine, 2000, p. 8).

Christine Hine conducted a Virtual Ethnography study on the participants of an online role playing game, in order to "*produce an account of the world*" (Hine, n.d., p. 13). Using this example, Virtual Ethnography is a methodology (second criterion) that aided in the study (first criterion) of a virtual world (third criterion).

12.2. Extension to Section 3.2

This example was made to further demonstrate my criteria for creative media theories.

1. **It must be a theory or a framework of ideas.**
2. **It must relate to art, that is driven by interactive technology.**
3. **It should increase productivity.**

The Cathedral and the Bazaar

Using an approach similar to Virtual Ethnography, Eric Raymond participated in online hacker culture (Raymond, 2001, p. 1). Through learning how this culture operates, he defined theories on how open source products are created. In the cathedral analogy, an individual or small team develops the product in private and releases it to the public (Raymond, 2001, p. 21). In the bazaar analogy, the product is developed openly in full view of the public (Raymond, 2001, p. 21).

The Cathedral and Bazaar theories (first criterion) describe different ways open source products, such as software, (second criteria) can be produced (third criteria). The same argument applies from section 3.2: that certain types of software can be considered works of art.