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A black and white illustration of a muscular man in a loincloth reading a large open book. He is standing in a dark, starry space. In the background, a large, dark, multi-armed figure is visible. The overall mood is mysterious and intellectual.

STORYING
HUMANITY
NARRATIVES OF CULTURE AND SOCIETY

RICHARD WIRTH
DARIO SERRATI
KATARZYNA MACEDULSKA

Storying Humanity

Probing the Boundaries

Storying Humanity:

Narratives of Culture and Society

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'Once Upon a Lager': Transforming a Batch Process into the 'Hero's Journey' Story Structure

Anna-Marie Jansen van Vuuren and Jane D. Stamp

Abstract

The focus of this chapter is to compare the traditional storytelling narrative model of the Hero's Journey, a popular structure in screenwriting, to a chemical engineering methodology. In chemical engineering, cheap raw materials are transformed into a complete product which is more useful and valuable to society. In the same way, in the Hero's Journey story structure, through overcoming various tasks the hero is refined and transformed. Thus the narrative structure with its roots in ancient mythology can be modelled on a multiproduct time dependent batch process that is used in a traditional beer brewing method. When one applies this to the narrative of brewing - the malt will serve as the protagonist, and similar to the protagonist in the Hero's Journey who faces many obstacles on his way of achieving the resurrection, the malt in the batch process has to go through various steps to become the elixir. Both the malt and the main character of a story need to go on a journey of transformation to become the finished product. The beer making procedure follows a recipe and even though the processing stages are essentially the same, similar to the process of change of the protagonist within the Hero's Journey - each hero will undergo processing in a slightly different way - and come out as a distinct product at the end. When one considers brewing from the point of view of a storyteller, the complexity of the process is made available to a broader audience. In comparing these seemingly unrelated processes - the art of brewing is revealed. Often viewed as a scientific process without the nuance of creativity, the comparison with storytelling establishes clearly that it is an art form on its own.

Key Words: Hero's Journey, storytelling, narrative structure, beer brewing, batch process, chemical engineering.

1. Introduction

'The Hero's Journey' is a term derived from the writings of Joseph Campbell. In his book, *The Hero with a Thousand Faces*, Campbell outlines the journey as a universal motif of adventure that can be seen in the world's mythic traditions.¹

This chapter explores how the chemical process involved in brewing beer is comparable to the process of designing a story. It begins with an account of the Hero's Journey structure, explaining how it is used as a narrative model for storytelling. Then the multiproduct time dependent batch process that is used as a traditional beer brewing method will be discussed. The final part of the chapter

concerns how the Hero's Journey storytelling model could be applied to the art of brewing in layman's terms.

2. The Hero's Journey Story Structure

Campbell's ideas on the hero myth have greatly influenced storytelling. Wallace states that Campbell's argument that myths, folktales and even dreams from a variety of cultures display the same essential pattern and this pattern have also been noticed by academics such as Vladimir Propp and Lord Raglan who adapted it for their own forms of analysis.² However, for the purpose of this chapter, the main focus will be on how the Hero's Journey model has been adapted by the writing guru Christopher Vogler in his book on screenwriting.³

In most stories the hero leaves their 'comfortable, ordinary surroundings to venture into a challenging, unfamiliar world'.⁴ It can be an *outward journey* to an arena where he or she will experience conflict with antagonistic, challenging forces or an *inward journey* to the mind, heart or spirit of the character.

The most important element of the Hero's Journey is that the hero grows and changes throughout the journey. As the *inward journey* of the malt becoming beer will be difficult to determine, the chapter's focus will mainly be on the phases of the *external journey* of how the malt will eventually become the beer, or for our purpose 'the elixir'.

A. The Ordinary World

Vogler states that in most stories the hero is taken out of the ordinary world and placed in a new, special world. To show the challenges that a new world will pose to the hero, it has to be contrasted against the character's ordinary world. Therefore the storyteller has to create an ordinary, *normal* world for the hero in the initial stage of the story, in order for the audience to compare this to the *special world* after the character is transported there.⁵

B. The Call to Adventure

After establishing the ordinary world, the hero is presented with a problem, challenge or adventure to undertake. 'Once presented with the *call to adventure*, the hero can no longer remain indefinitely in the comfort of the ordinary world'.⁶

The call to adventure also serves a purpose in establishing the hero's goal in the story.⁷

C. Refusal of the Call (Reluctant Hero)

Often the hero is reluctant to cross the threshold of adventure, as he or she is afraid of what may be in store for them. The greatest of all fears for the hero is often the fear for the unknown. At this stage the hero has not fully committed to the journey and may have thoughts of turning back.⁸

D. Meeting the Mentor

In many stories it is the mentor who coaxes the hero into accepting the 'call for adventure'. 'The relationship between the Hero and the Mentor is one of the most common themes in mythology and one of the richest in its symbolic value'.⁹ The function of the Mentor is to prepare the Hero to face the dangers of the unknown. The mentor may give advice, guidance or in a fantasy story they may even give magical equipment or gifts.¹⁰

It is important to note that the hero has to face the unknown alone and that the mentor can only travel with the hero for a certain part of the journey. However, the value of the mentor can not be overlooked, as Vogler humourously puts it: 'Sometimes the Mentor is required to give the Hero a swift kick in the pants to get the adventure going'.¹¹

E. Crossing the First Threshold

When the hero finally commits to the adventure, he or she enters the special world of the story by *crossing the first threshold*. This means that the hero agrees to 'face the consequences of dealing with the problem or challenge posed in the Call to Adventure'.¹²

F. Tests, allies and Enemies

After the hero has crossed the first threshold, he or she encounters tests and ordeals, makes allies and enemies and 'begins to learn the rules of the Special World'.¹³ In this phase, one will see the development of the character, especially in stressful situations.

G. Approach to the Inmost Cave

The most dangerous place in the Special World is called the inmost cave. The *cave* is where the object of the quest is hidden and often it is the headquarters of the hero's greatest enemy.¹⁴ As the hero enters the cave he or she will cross the second threshold. This stage is also called the *approach phase* as heroes often pause at the entrance to prepare, plan and outwit the enemy's guards.¹⁵

H. The Ordeal

According to Vogler, 'the ordeal is a "black moment" for the story's audience'.¹⁶ The Hero gets involved in a direct confrontation with his greatest fear and faces the possibility of death. The audience are held in suspense, as they do not know if the Hero will survive.¹⁷

I. Reward (Seizing the Sword or Elixir)

After surviving death and beating the enemy, the hero takes possession of the treasure he or she searched for – the reward.¹⁸ Vogler argues that:

The Hero may also become more attractive as a result of having survived the Ordeal. He has earned the title of Hero by having taken the supreme risk on behalf of the community.¹⁹

Vogler argues that this risk is an important part of the journey because self-sacrifice lies at the root of the concept of the Hero archetype.²⁰ At the beginning of the journey the Hero might be egotistical and inherently flawed, but throughout the journey he or she overcomes obstacles and undergoes change; and this growth and wisdom prepares them to perform the decisive action of the story which will help them to overcome the villain and begin their road back to the Ordinary World. The sacrifice could also entail the Hero giving up something of value that he might not have been willing to part with at the beginning of the journey.

J. The Road Back

In the third act of the story, the hero begins to deal with 'the consequences of confronting the dark forces of the Ordeal'.²¹ If he or she has not yet reconciled with the hostile forces that were disturbed by seizing the sword, they may still follow him or her. According to Vogler this stage also marks the moment when the hero realises that the special world must eventually be left behind to return to the ordinary world.²²

K. Resurrection

The hero has to be cleansed in one last *ordal of death and resurrection* before returning to the ordinary world. Vogler calls this the 'second life-and-death moment...: Death and darkness get in one last, desperate shot before being finally defeated'.²³ The Hero is transformed by this and is finally able to return to ordinary life reborn as a new being.

L. Return with the Elixir

This is the last phase of the Hero's Journey. According to Vogler the return of the hero to the ordinary world is meaningless 'unless he or she brings back some elixir, treasure, or lesson from the Special World'.²⁴ The Elixir may be a treasure won during the journey, but it could also be abstract like freedom, wisdom or knowledge.²⁵

3. Batch Processes

Chemical engineering processes aim to transform raw materials into more useful and economically attractive products. Many processes are termed continuous and operate at a steady state with a constant stream of products being produced. A batch process, however, is a series of independently operated tasks which are time dependent. This allows improved control in terms of quality and yield compared to continuous processes.²⁶ Batch processes are commonly used for

the manufacture of products required in small quantities or for specialty and complex products of high value. Batch processing is found in the food industry, breweries, dairies, meat processing facilities, biochemical plants and agrochemical facilities. Approximately half of all production facilities make use of batch processes. Batch plants are also popular due to their flexible and adaptable nature.

Batch plants consist of unit operations occurring at distinct times during the time horizon, meaning processing units are not necessarily always active. A batch plant is classified as either multiproduct or multipurpose depending on how materials flow through the processing equipment. Each batch of product follows the same equipment path in a multiproduct facility and production runs are carried out for each product. In a multipurpose plant, the batches can use different pieces of equipment and need not follow a single path. Multipurpose plants can be used to produce different products simultaneously or batches of the same product can also be produced at the same time while following completely different paths. Multipurpose plants are more flexible than multiproduct plants, but also more complex.²⁷

Time poses an additional constraint when production is done by means of batch processing rather than via continuous operations. Optimal scheduling and timing of batch operations in a plant to use resources such as raw materials, process units and storage more efficiently becomes important for the plant to operate economically.

A batch process can be described using a recipe, an example of which is the state task network or STN.²⁸ This contains all the necessary states, such as feeds, intermediates and products. It also includes the tasks or operations required to transform the materials from input to output states by physical, chemical or biological means and in addition shows the task precedence.

4. Brewing

Making beer consists of a set of specific steps. Barley is first malted. It is soaked in water allowing it to germinate and is then dried. During this process, enzymes are formed which will convert starch into sugars. Crushed malted barley, 'malt', is steeped in water at about 66°C in a mash tank in a process known as mashing. Here, starch is converted to soluble sugars. This takes between 45 minutes to an hour. Different malts in varying proportions are used to make various beers. The main ingredient is usually pale malt with roasted malt used to form different flavours and styles of beer. The next process is lautering. The lauter tank is like a large sieve which separates the fermentable liquid wort from the grain. The product from this process is known as sweet wort. The wort is then transferred to a kettle where it is boiled for an hour. Both bittering and aromatic hops are added during various intervals during the boiling. The result is hopped wort. The wort is then cooled to fermentation temperature using a heat exchanger. The next process is fermentation. For a lager, bottom fermenting lager yeast is used and fermentation will take around 10 days at a temperature between 8°C and 12°C. For

ale, top fermenting ale yeast is used and fermentation will be at a higher temperature, between 14°C and 18°C and will last about 5 days. Finally, beer is formed which is then filtered, carbonated and packaged, ready for enjoyment.

5. Comparisons of a Batch Process with Story Structure

Beer is made using a batch process, an overview of which is given in Figure 1. In the brewing process the barley is the hero - the most important ingredient. Barley is an ordinary grain seemingly with nothing special about it. After malting, the barley finds itself on a different journey, on its way to becoming something far greater. The first step on this call to adventure is the mashing process where the all-important fermentable sugars are formed. In this process the brewer may be seen as the mentor, guiding the malt on its journey. The brewing process is indeed very hands-on and as such the brewer becomes part of the journey and will be there to intervene if there are any processing problems. The lautering of the beer can be seen as crossing the first threshold as the resulting sweet wort is where the malt becomes beer-like for the first time. Boiling is the next process which can be seen as the ordeal. During this time, allies such as hops are added. The hops contribute to the bitterness, aromaticity and overall balance of the beer. During boiling, certain unwanted chemicals as well as proteins are also removed. The boiling brings its reward in the form of clear, hopped wort. The road back is the cooling process where the wort is brought to fermentation temperature quickly using a counter-current heat exchanger. When this has been achieved, the wort is ready for its final transformation and resurrection into beer as we know it. The final packaged product is the powerful treasure or elixir obtained after a somewhat lengthy process.

The brewing process described is an example of a multiproduct batch process which can be designed and modelled using certain governing chemical engineering principles which give it life. The main aspect of a multiproduct process is that different products can be produced using the same basic processing units, tasks and resources, such as raw materials and utilities. Variations on a theme are therefore produced. There is a strong focus on the growth and development of the products from each task from one form to the next. The process is flexible and allows for some creativity. However, without the overall governing form, it is unable to achieve the objective as the hero deviates too much from the required path. It can be considered a structured art. The recipe also allows the process to be repeatable and as such universally understood and applicable. As the brewer spends time mastering his craft, he himself can be seen as the hero of his own journey.

6. Conclusions

The theory of narrative has become increasingly important to all academic disciplines. As Martin states:

Mimesis and narration have returned from their marginal status as aspects of "fiction" to inhabit the very center of other disciplines as modes of explanation necessary for an understanding of life.²⁹

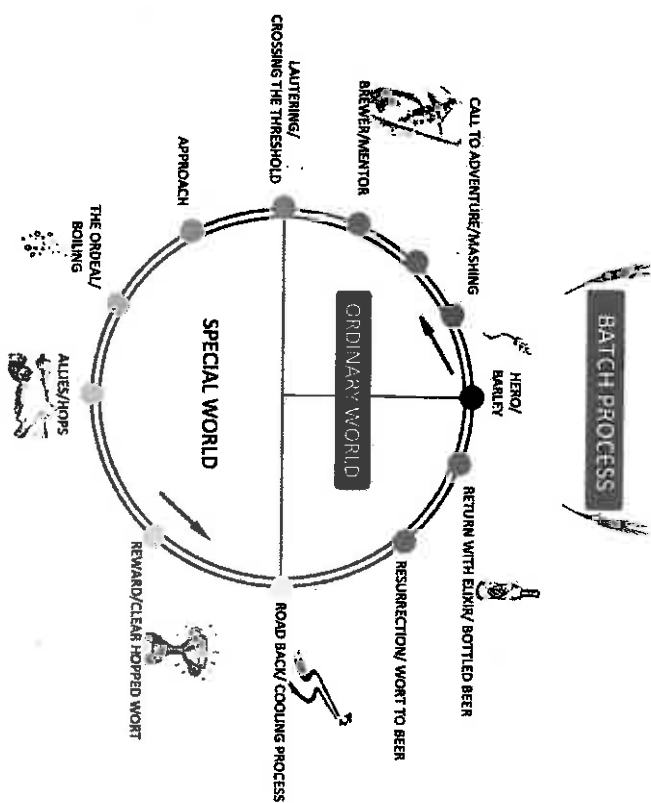


Figure 1: A beer making batch process as the Hero's Journey Story Structure³⁰ © 2014. Courtesy of Wanda Verstler.

In this chapter a traditional storytelling model that is usually found in Screenwriting has been applied to a batch process, a chemical engineering methodology. The process of beer making has been compared to the Hero's Journey structure in which a protagonist goes on a quest to overcome great obstacles and return with a magical agent or an *elixir*.

The authors have found that both of these processes have similar goals and objectives that are imperative for the transformation to take place. One may ask, similarly to Martin:

But what could a theory be, other than a necessary step on the path to dialogue; and why would it be created, if not as an answer to a question?²¹

The purpose of this chapter was to build a bridge between two vastly different fields: one that forms part of the arts, namely screenwriting, and one that is regarded as applied science - chemical engineering.

In comparing these seemingly unrelated processes, the art of brewing is revealed. Often viewed as a scientific process without the nuance of creativity, the storytelling application establishes clearly that a batch process is an art form on its own and by considering brewing from the point of view of a storyteller, the complexity of the process is made available to a broader audience.

Notes

¹ Campbell coined the term 'monomyth' (which he borrowed from the author James Joyce) to describe the pattern that is common to heroic tales in every culture. See Joseph Campbell, *The Hero with a Thousand Faces*. (New York: Pantheon, 1949).

² Wallace also mentions other scholars that have investigated the monomyth, such as F.M. Cornford, Jessie L. Weston and James Frazer. See Wallace Martin, *Recent Theories on Narrative*. (New York: Cornell University Press, 1986), 88-89.

³ Vogler argues that Campbell's toolkit is so successful with filmmakers, because it can be used to construct a dramatic, entertaining and psychologically true story. See Christopher Vogler, *The Writer's Journey: Mythic Structure for Writers*, 3rd edition. (California: Michael Wiese Productions, 2007), 9.

⁴ *Ibid.*, 13.

⁵ *Ibid.*, 15.

⁶ *Ibid.*

⁷ *Ibid.*

⁸ According to Vogler some other influence such as the encouragement of a mentor, a change in circumstances or a further offense against the natural order of things, is needed to convince the hero to pass this point of fear. For example in the film *Spiderman* Peter Parker heeds the 'call to adventure' to become Spiderman when he sees his uncle being murdered. In certain stories the hero may not quite refuse the call, but he/she certainly is the reluctant hero. *Titanic* is one example of this, where Rose, the principal hero, can be regarded as the reluctant hero that crosses the threshold on the ship, the Titanic. On the other hand Jack, the second principal hero, shows no reluctance when receiving his 'call to adventure'. See *Ibid.*, 17.

⁹ *Ibid.*

¹⁰ In the film *The Lion King*, the Hero has many mentors throughout the story. His first great teacher is his father, who teaches him kingship and the Circle of Life, whilst diplomacy and statecraft is taught to him by Zazu. In the second Act his friends Timon and Pumbaa are his mentors, as they teach him their Hakuna Matata lifestyle. Rafiki is the mentor who gives the Hero 'something needed to complete the journey and outface death', in other words, Rafiki gives Simba survival lessons which he needs to face his destiny. The love interest Nala, could also be seen as a mentor, as she teaches him about love and responsibility. Finally his father's spirit could be seen as a supernatural mentor who encourages him to face his destiny. See *Ibid.*, 270.

¹¹ *Ibid.*, 18.

¹² In this stage the Hero has overcome the fear and has decided to take action and confront the problem. 'The Hero is now committed to the journey and there is no turning back'. See *Ibid.*

¹³ *Ibid.*, 19.

¹⁴ *Ibid.*, 20, 250.

¹⁵ *Ibid.*, 251.

¹⁶ In *The Wizard of Oz* Dorothy is trapped by the Wicked Witch, and it appears as if there is no way to escape. *Ibid.*, 21.

¹⁷ In certain genres, such as romantic comedies, the death faced by the Hero may simply be the temporary death of the relationship. *Ibid.*

¹⁸ In the film *Titanic* the heroes, Rose and Jack, receive some reward from their death and rebirth experience. They bonded in the ordeal and now they are supporting each other in the struggle to survive. *Ibid.*, 20, 251.

¹⁹ *Ibid.*

²⁰ *Ibid.*, 29.

²¹ *Ibid.*, 22.

²² *Ibid.*

²³ In all the *Star Wars* films there is a final battle scene where the Hero is almost killed and then miraculously survives. Through this battle experience the Hero is transformed into a new being. *Ibid.*

²⁴ *Ibid.*, 23.

²⁵ In *Titanic* the Elixir or 'healing message' of the film is that Rose's experience and memories are more important than any physical possessions. The 'final reward' is the photos of her full, free life - which are a fulfilment of Jack's prophecies. The Elixir she brought back was living a life for both of them. *Ibid.*, 252.

²⁶ Omid Pourali, Majid Amidpour and Davoud Rashtchian, 'Time decomposition in batch process integration' *Chem. Eng. Process.*, 45 (2006): 14-21.

²⁷ Multiproduct plants are also a subset of multipurpose plants. See Robert E. Sparrow, Graham J. Forder, and David W.T. Rippin, 'The choice of equipment

- sizes for multiproduct batch plants. Heuristics vs branch and bound' *Ind. Eng. Chem. Process Des. Dev.*, 14 (3) (1975): 197–203.
- ²⁸ Emilia Kondili, Constantinos C. Pantelides and Roger W.H. Sargent, 'A general algorithm for short-term scheduling of batch operations – I. MILP formulation' *Comp. Chem. Eng.*, 17 (2) (1993): 211–227.
- ²⁹ See Wallace Martin, *Recent Theories on Narrative*. New York: Cornell University Press, 1986, 7.
- ³⁰ Figure created by Wanda Verster upon request of the authors Jansen van Vuuren and Stamp, specifically to be published and used as part of the chapter for *Interdisciplinary.net*.
- ³¹ *Ibid.*, 10.

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