The Intersection of Science and Local Culture:

A Film Analysis

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Abstract. A film titled *Semesta Mendukung* was released in 2011. It is a work of fiction that combines local culture and the concept of science. The family drama film centres on a junior high school student named Arif from Sumenep Regency on Madura Island, East Java. Arif likes Physics, but his parents are not rich, so he has to work in a workshop after school. The film opens with a scene of a bull racing competition, a typical Madurese culture. Meanwhile, the concept of science appears three times. First, Arif showed how to make a balloon not burst when pricked by a needle. Second, Arif helped his friends pick up a ball stuck in a tree using the water rocket concept. Third, Arif participated in the International Physics Olympiad in Singapore and was asked to make a thunderous sound using cloth. Arif completed this task brilliantly when he made a bull racing whip with a sarong cloth given to him by his father in the village. This article aims to analyze the intersection between science and local culture by looking at the intrinsic elements in the film, namely characters and characterization, setting, plot, language, and theme. The theory of the intrinsic elements of a literary work was used to analyze the film. The analysis results show that science is an inseparable part of a culture. Although often not realized, there are scientific principles in everyday activities, including cultural events.

Keywords: Local Culture, Madura, Science-Fiction Film

1   Introduction

Research mentioned that some entertainment media commodities, such as movies and TV dramas, aim to teach audiences about science. Many creations aim to entertain and include scientific facts, personalities, and representations. Science-themed fiction can teach people about science, such as animated comedies, books, radio serials, plays, comics, and computer games [1].

That research result is also suitable for an Indonesian film, *Semesta Mendukung*, released in 2011. It focuses on a poor boy named Arif from Sumenep, Madura Island, who loves Physics. After a long training, he joined an International Physics Olympiad held in Singapore. However, he has a hidden agenda to find his mother, who had left him for seven years to work in Singapore.

This film is a typical family drama because it discusses the relations between Arif and his father, friends, and teachers. However, this film also portrays three basic concepts of Physics. They are how to make a balloon not burst when pricked by a needle, the water rocket concept, and how to make a loud sound using cloth. These three concepts of Physics are the scientific facts portrayed in the film. As mentioned by [1] above, many science fiction products aim to entertain and include scientific facts. Based on this, *Semesta Mendukung* is a science fiction film.

Besides containing scientific facts, it is also possible that science fiction has a relation with culture. Another research mentioned that researchers in several professions have utilized science fiction as a metaphor for human civilization, not just in literary studies. Science fiction can provide new perspectives on human society. These topics are relevant to cultural, social, scientific, and literary studies and can help improve science communication and education [2].

The above research result suits *Semesta Mendukung*. This film takes Madura Island as its location. Moreover, it opens with a scene of a bull racing competition, a typical Madurese culture. Besides, the film tells that Arif's father was a salt farmer before, and he did not continue that job because of the salt crisis in Madura. Arif's father's situation portrays the cultural phenomenon in Madura. Madura is a salt-producing island in Indonesia, so many Madurese works as salt farmers. However, as the film mentioned, weather anomalies caused a salt crisis. The salt crisis made a lot of people, including Arif's father, do odd jobs to get on with life. Research supports what is mentioned in the film. The research said salt price, weather, salt companies, trade regulations, and innovations are the dominant factors causing the salt crisis in Madura, and weather anomalies are second [3].

Besides bull racing competitions and salt farming being typical jobs in Madura, *Semesta Mendukung* also mentioned the profession of satay seller in Jakarta. A Madurese character who migrated to Jakarta mentioned that he worked as a *ketoprak* seller because there were a lot of Madurese in Jakarta who worked as satay sellers. It also shows another cultural phenomenon because there are a lot of Madurese satay sellers in some big cities in Indonesia, such as Jakarta and Yogyakarta. Research shows that being a satay seller is a typical job for Madurese people who migrate to Yogyakarta. This job has been passed down from generation to generation. Apart from being a legacy from the previous generations, the branding of Madurese satay as a delicious traditional food and the success stories of other satay sellers is why native Madurese migrants choose to sell satay in other cities [4].

Since *Semesta Mendukung* portrays scientific and cultural phenomena, this article chooses that film as the object of the study. This article aims to analyze the intersection between science and local culture by looking at the intrinsic elements in the film, namely characters and characterization, setting, plot, language, and theme. Finding the intersection between science and local culture has never been conducted before. Through a search on Google by typing "semesta mendukung research", no journal article can be found. There are some archives, but only their abstracts can be read because they belong to certain universities. They are students' theses not published in open-access mode, so reading the whole text online is impossible. Because those theses are

inaccessible, this article can be the first article about *Semesta Mendukung* that is published online and in open-access mode.

2   Methodology

This article was written in a descriptive style. The primary data source was a science fiction film entitled *Semesta Mendukung*. Other data were collected using a library research technique, such as reading related journals about science fiction. After collection, the data were analyzed using the theory of the intrinsic elements of a literary work. Characters and characterization, setting, plot, language, and theme were the intrinsic elements chosen for the analysis.

The first intrinsic element is the characters and characterization. Characters in a literary work can be defined as the figure and the personality. Moreover, characters can be divided into flat characters and round characters. Flat characters are one-dimensional with simple personalities. Meanwhile, round characters are complex figures [5]. Characters' development in a literary work is affected by specific motivations given by the author. Motivations are the reason behind certain attitudes or behaviours of a character [6]. In other words, every character in a story has specific motivations for doing something and can also show their personality. Motivations can also affect the development of a character. For example, when a good character decides to do evil things in the middle of the story, it is believed that that character has specific reasons or motivations behind the wrong attitude.

Meanwhile, characterization refers to the way how an author portrays the characters. It can appear in many forms. First, an author can directly describe a character in a sentence. For example, an author can write, 'Albert is a diligent boy'. Second, an author can indirectly describe a character. For example, instead of writing, 'Albert is a diligent boy', an author writes, 'Albert wakes up at 6 a.m. every morning, then helps his parents sweep the floor'. Besides actions, the characterization of a character can be seen through what the character says or thinks. Next, the characterization of a character can also be seen in how other characters say and think about that character.

Moreover, a combination of those things can also be used to characterize a character. At last, an author can use an incidental way of characterization. For example, what a character is like can be seen from its appearance or name [7].

The next intrinsic element is the setting. Setting refers to the time and place of a story. Setting is important because it can make certain things happen, push characters to act, bring them to realizations, and make them expose their deepest intention. In a story, the setting of time can be a specific hour, year, or century. The setting of time can also be written unspecific, such as 'on the first day of the moon landing'. Here, readers can see that the story's setting is 1969, although the author does not write it. Readers can know the time setting because the moon landing is a famous historical event. Besides the setting of time, a story also has a setting of place that refers to where a story takes place. Examples of the setting of place are a house, a town, a bridge, and a region [6].

The next intrinsic element is the plot. Plot refers to the arrangement of the events in a story. In general, a story is started with an exposition. The exposition part gives any information to open the story, like the characters' introduction, the setting, what happened before the story, and other background information needed to understand the story. After the exposition comes the complication. Complication is the beginning of the problems faced by the main characters, including conflicts among the characters. Then, the complication arises into some crises, and at a certain point, those crises reach the climax. The climax is the highest tension when problems and crises faced by the characters reach the highest tension. The climax follows the conclusion or resolution when the characters choose specific options to overcome their crises [6].

The next intrinsic element is language. Examining a work of fiction's language, including word choice and sentence structure, can provide insight into its meaning. An author uses language to achieve the desired effects and distinguish his/her work through style. The most commonly used style is metaphor and simile. A metaphor is an implicit comparison, and a simile is an explicit comparison. The other style variation commonly used by an author is a specific tone, among other irony. Irony refers to using comedy or jokes to mock or scorn others. Besides irony, other tones commonly used by an author are flat tone, sympathetic tone, and honour tone. Last but not least, the use of formal words versus daily words also shows the language used by an author, which can imply specific meanings [7].

The next intrinsic element is the theme. Theme refers to the overarching notion or insight revealed throughout the story. A theme serves as a tool for writers to bend their stories into meaningful shapes. In literary fiction, themes are rarely so clear. A theme can be more than just a moral message. It can also refer to the overall meaning of the story. The theme is often the driving force behind a successful short tale, serving as a unifying principle. The topic of a narrative transcends its characters and circumstances. Moreover, there is a possibility that one story has more than one theme. There are six things to consider in formulating the theme of a story: take a look at the story's title and think about what it may indicate; think about whether the main character changes in any way during the story; find whether the author and/ or the character observe human nature or human life; try to find particular objects or characters, significant animals, repeated names, song titles, and others that might have another significance beyond the objects itself because those symbols might show a central theme; a theme sentence should state the general language, not just the plot of a story or in other words, a theme sentence should be true for the whole story, not just parts of it [6].

3   Result and Discussion

Semesta Mendukung is a film about a Madurese boy named Arif. He lived with his father, Muslat, because his mother had left home to work in Singapore for seven years. Arif is characterized as a diligent and clever boy. It can be seen from what others say about him. First, his teacher, Ms. Tari, commended him for always coming to school earlier than her (4:45-4:48). Second, in scenes 6:56-7:00, his neighbour said that he believed what Arif said. He also said that Arif was smart [8]. The first scenes show

Arif's teacher acknowledging him as a diligent student, and the second scenes show him being acknowledged as a clever boy.

The next character in the film is Muslat, Arif's father. He is characterized as hard and ready to fight person but loves Arif. Scenes 7:55-8:15 portray how Muslat defended Arif when a neighbor wanted to hit him. Next, scenes 28:19-28:36 show Muslat carrying Arif, who had fallen asleep at the study table, to bed [8]. The first scenes show that Muslat is a hard and somehow rude person, but he loves his son, as seen in the second scenes.

The next character is Ms. Tari. She is Arif's teacher at a high school in Madura. She is characterized as someone firm in her stance, holds on to her principles, and is persistent in motivating her students to learn. Scenes 25:00-26:01 show that Ms. Tari firmly holds her principles. These scenes show Ms. Tari expressing her opinion regarding the importance of education for all children, even from poor families. She even left her friends to teach children in a remote village. Scenes 18:13-18:34 show Ms. Tari's persistence in motivating her students to learn. Ms. Tari motivates Arif and his friends in these scenes when she teaches physics. She used a story about Einstein and said that, according to Einstein, someone who never makes mistakes is a person who never tries new things [8].

Besides those three characters, this film has some supporting characters. The first is Mr. Alul. Arif's neighbour in Madura promised Arif, he would help him find his mother in Singapore. He kept asking for money from Arif and used searching for Arif's mother as an excuse. Second is Mr. Tio. He was a trainer at FUSI (*Fisika untuk Siswa Indonesia*) or Physics for Indonesian Students. FUSI was a club founded by Mr. Tio that aimed to provide intensive training for talented students from all over Indonesia to participate in the International Physics Olympiads. The film portrays Mr. Tio as Ms. Tari's old friend. Ms. Tari decided to leave Mr. Tio and his group because Ms. Tari disagreed with Ms. Debi, another friend of Mr. Tio, who said that to develop FUSI, they had to prioritize money over children's rights to study.

The third is Thamrin. He was Arif's best friend at the FUSI club. He was a native Betawi boy. He joined FUSI to get a scholarship so her mother would no longer need to pay for his school. The fourth is Cak Kumis. Cak Kumis was a *ketoprak* seller near FUSI boarding house. One evening, Thamrin brought Arif to buy *ketoprak*. Thamrin told Cak Kumis that Arif was from Madura, the same as him. Arif and Cak Kumis then became friends, and the other evening, when Arif got frustrated because of his low grades, he got some advice from Cak Kumis. Besides those five characters, there are other students of FUSI, Arif's friends at his school in Madura, his headmaster in Madura, Ms. Debi, Mr. Tio's assistant at FUSI club, and Arif's mother who finally comes home at the end of the film.

The setting of places in the film are Madura, Jakarta, and Singapore. The film opens with a scene of a bull racing competition in scene 1:20 [8]. The bull racing competition is a cultural product of Madura, so this shows that the film tells something about Madura. Moreover, scenes 2:06-2:31 show the situation of Madura land. It is depicted as a bare and dry land without trees. The next setting is Jakarta, where the FUSI club and its boarding house are located. The last setting is Singapore, where the international

physics competition is conducted [8]. Next, this film does not mention specific times like certain years or periods, so the time is unknown.

After the opening scenes of the Madurese bull racing competition, the film introduces Arif as the main character. Arif was portrayed on a plane with Mr. Tio. He said that he could only be on a plane departing to Jakarta because of two ladies, his mother and his teacher, Ms. Tari. Then, the film introduces Ms. Tari and Arif's school in Madura. It also introduces Arif's after-school job at the workshop and his father, Muslat. The first complication appeared when Arif told his father that he wanted to search for his mother in Singapore with some help from Mr. Alul. However, his father forbade him.

Different complications follow the first complication between Arif and his father. Arif got into a personal conflict. One day, in a Physics class, Ms. Tari challenged her students to make a balloon pierced with a needle, not burst. Arif found a way to do this by looking for a dark-coloured part of the balloon, then piercing it, and the balloon did not burst. After seeing Arif's ability, Ms. Tari asked him to join a science competition in Surabaya, the capital of East Java province. He said no because he had to work after school, but he still accepted the pamphlet from his teacher. He thought about it at home, and when he realized he could win IDR 2,000,000, he told his teacher he wanted to join. It seemed that his decision was the ending of his conflict.

However, the next day, he heard that his headmaster did not agree to pay him to depart to Surabaya for a science competition. Arif's hope of getting money to pay Mr. Alul to search for his mother disappeared. The hope of finding his mother, who was instantly dashed, was not Arif's only problem. When talking to Mr. Alul, Arif found out that his mother left home because she could not stand Arif's father's gambling habit. Arif became angry and fought with his father. This fight worsened Arif's initial conflict with his father when his father did not allow Arif to look for his mother in Singapore.

Although he fought with his father, Arif kept going to school. One day, he saw his friends playing football. After one of his friends kicked the ball, it was stuck on the tall tree, and nobody could take it. Arif made a water rocket and launched it so the ball fell from the tree. Ms. Tari saw it, made a video, and then sent it to Mr. Tio. Mr. Tio was interested in Arif's ability and came to Madura to offer him the chance to join the FUSI club. At first, Arif said no because he had to work after school. However, he finally agreed after knowing he had a chance to join an International Physics Olympiad in Singapore. He had a hidden agenda to find his mother in Singapore.

Joining the FUSI team and getting intensive science training could not solve Arif's problem of finding his mother. He had to be in the top six to be able to go to Singapore, but his first test result put him at the lowest rank. He was very disappointed, and one evening, he escaped from the boarding house. He met Cak Kumis, a *ketoprak* seller, near the boarding house, and both had a short conversation. Cak Kumis gave some advice to Arif. His advice made Arif's spirit rise again, and he became more diligent in his studies.

However, another problem came when Mr. Tio announced the names of six students who were going to Singapore to join the International Physics Olympiad. Arif was not chosen, and he was very disappointed. He was sitting alone in his bed and had packed his things, ready to go home to Madura. It is the climax of the film. After this climax,

a solution came out when Ms. Debi announced that the sponsor had agreed to pay for one more student, and it was for Arif.

In Singapore, Arif and Thamrin looked for Arif's mother but could not find her. Then, they did their Olympiad. Arif narrated that there were three theoretical questions and one practical question. For the practical question, he and other participants were asked to make supersonic vibrations that exceeded the speed of sound, 340 m/s, thus producing a very loud sound. After thinking, Arif found that the sharp tip was the key to producing a very loud sound, like the whip used in bull racing competitions. Arif then cut the sarong cloth given by his father before he went to Jakarta and rolled it up by making a pointed end at one end of the cloth. It made him win the Olympiad. He then went home to Madura and surprisingly found his mother waiting for him. Winning the Olympiad and finding her mother returned home are the conclusions or the answers to his problems in the film.

Next, regarding language, this film mainly uses Bahasa Indonesia. However, there are some repeated Madurese words like *ebuk,* meaning mother; *cung, which* is a way to address a boy*;* and *enggi,* meaning yes. Besides those words, there are some other words, namely *sakalangkong* (5:37), meaning thank you, *sengkok* (8:11), meaning I, *depadeh* (1:03:33), meaning you are welcome, and *sapurana* (1:08:01) meaning I am sorry [8].

Finally, the film's theme can be seen in the title *Semesta Mendukung*. According to [6], theme refers to the story's overall meaning. It is the driving force behind a successful short tale, serving as a unifying principle. The title of the film *Semesta Mendukung* means the universe supports and is the unifying principle of the film. The driving force moves the main character to achieve his dreams. As explained by Mr. Tio in the film, when you have a strong purpose, effort, and perseverance the whole universe will support you. In the film, this happened to Arif when he won the International Physics Olympiad at the end of the film, and his mother came home. He got what he wanted after a long journey and hard effort.

From the film's beginning, it has been told that Arif wanted to find his mother, and he did many things to find his mother. He asked for help from Mr. Alul and worked to gather money to be given to Mr. Alul. Then, he tried to join a science competition in Surabaya because he could get IDR 2,000,000 if he won. However, his headmaster did not agree with this idea. Then, when Mr. Tio came to Madura and asked him to join the FUSI club, he did not want to go. However, after knowing he could go to Singapore, he followed Mr. Tio to Jakarta. After joining the FUSI club, he worked hard to be selected to go to Singapore but could not. However, the universe supported him when the sponsor agreed to pay for one more child to go to Singapore. The following support from the universe was when he won the Olympiad and found his mother at home.

From the intrinsic elements of the literary work mentioned above, characters and characterization, setting, plot, language, and theme, the intersection of science and local culture can be seen in four parts. The first intersection between science and local culture can be seen in the main character, Arif, especially in his T-shirt. At the beginning of the film, it is portrayed that Arif wears a T-shirt with a white and red striped motif. This distinctive T-shirt appears at the film's beginning and a few times in the film. It is a

typical T-shirt from Madura. The striped colours on the T-shirt reflect the Madurese people's high fighting spirit and firm attitude [9].

The second intersection between science and local culture can be seen from the setting where the film opens with the bull racing competition, a typical cultural performance from Madura. Moreover, some scenes show the dry land situation in Madura. From these scenes, the spectator can know that the film's setting is in Madura, although it is not written on the screen.

The third intersection between science and local culture can be seen in the language. The language used in the film is also a cultural marker. The spectator can know that the film portrays Madurese culture from the repeated words in the Madura language namely *ebuk* meaning mother, *cung* is a way to address a boy, *enggi* meaning yes, *sakalangkong* meaning thank you, *sengkok* meaning I, *depadeh* meaning you are welcome, and *sapurana* meaning I am sorry.

The fourth intersection can be seen from the plot. The plot shows different scenes when Arif demonstrates his ability in science. First are the scenes when Arif shows how to make a balloon not burst when pricked with a needle. Finding the dark-coloured part of the balloon is the key to making a balloon not burst when pricked with a needle. The dark colour shows that part of the balloon is thick, and when the thick part is pricked, it will not burst. Second are the scenes when Arif helps his friends pick up the ball stuck in a tall tree using the water rocket concept. Third are the scenes in which Arif demonstrates his ability in science at the International Physics Olympiad in Singapore. The task for the Olympiad is to create supersonic vibrations that exceed the speed of sound, 340 m/s, thus producing a very loud sound. The sharp tip, like the whip used in bull racing competitions, is the key to finishing this assignment. Arif can finish this task because he remembers his cultural performance in a bull racing competition in Madura. He remembers the whip used at the competition and makes one from his sarong.

4   Conclusion

From the discussion above, it can be seen that science and culture are parts of people's daily lives. In the film entitled *Semesta Mendukung*, the intersection between science and local culture can be seen clearly. This film focuses on a Madurese boy named Arif who loves science. He loves science, and, at the same time, he lives his culture. His love and passion for science can be seen in the film scenes when Arif always reads science books. Moreover, it is depicted that he works very hard during his training at the FUSI club. Meanwhile, the fact that he lives his culture can be seen from the scenes in the film when he watches the bull racing competition, speaks in a Madurese accent and language, and wears a T-shirt with the typical red and white striped pattern of Madura.

Next, the film also shows that science is an inseparable part of culture because there are scientific principles in everyday activities, including cultural events. The film shows that science is a separable part of everyday activities twice. The first is the water rocket principle Arif uses to help his friends pick up the ball stuck in a tall tree. The second is the cultural event of Madura called the bull racing competition. The scientific principle

can be seen in the whips used by the bull racing players. The whip's tip was made sharp to produce a very loud sound. It is based on a scientific principle, as portrayed in the film's last part when Arif wins the International Physics Olympiad in Singapore.

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