

Human cloning: A soap opera as a science communication tool

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Abstract

Our objective in this work is to analyze the advantages, limitations, and challenges of a TV soap opera as a tool for communicating issues related to human cloning. Our object of study is *O clone* (The clone), broadcast by TV Globo, the main channel in Brazil, reaching an audience of approximately 85 million people per day. The methodology we used in our study was an 'exhaustive qualitative methodology': we recorded every chapter in videotape and identified every part related to science and scientists. Then, we undertook an analysis of the recorded material aiming to answer the following questions: What and how are scientific issues and genetic techniques presented? What image of scientists is being transmitted? How are ethical and risk aspects being considered in *O clone*? To what extent is it possible to put in debate, in an appropriate way, such a controversial subject, involving so many different aspects, using a fanciful soap opera to discuss the topic? Finally, we aim to propose the following question: is it possible that a soap opera like *O Clone* can be used as a significant science popularization tool?

I. Introduction and methodological issues

In the last decades, as consequence of the growing interest toward science communication activities, studies have been aimed to the use and possible impact of wider tools associated to mass communication. The big discoveries and applications of science have frequently been appearing as subject – either central or secondary – in literature and

mass media, thus contributing for the creation of a collective image of science and scientists. The interface between science and poetry has been approached by several authors (Nicholson, 1965); the impact of literature stories on science popularization has been analyzed, especially in science fiction. This is the case, for example, of Frankenstein, probably the more powerful modern myth related to life, to which it was dedicated an interesting book (Turney, 1998). Films on science themes or science fiction films have been receiving attention as well. Theater is also an interesting tool for science communication (ver, for example, Raichvarg, 1993), in particular for analyzing the context of science production and for discussing controversial aspects, as in Brecht's *Galileu Galilei* and, more recently, Michael Frayn's *Copenhagen* (Frayn, 1998). In Brazil, a popular cheap reading matter (called 'cordel') has also been used – although in an incipient way – to approach science issues.

Soap operas in general have been reaching a wide audience through different channels (comics, radio, TV, etc.). Due to the increasingly role of science in everyday life of the people, several soap operas tangentially touches science. Others, though, dedicate significant parts of their scripts to science issues. For instance, an entertainment-education radio soap opera, produced by Apwe Plezi, was broadcast from February 1996 to September 1998 in St. Lucia (Vaughan et al., 2000). The program promoted family planning, HIV prevention and other social development themes. In Brazil, soap operas – broadcast firstly in radio and later in TV – became one of the most popular programs, reaching huge audiences, sometimes overcoming the index of 50% of the whole population.

The content of the soap operas, its reception by the audience and the attitudes they evoke in people have rarely been studied. Being a versatile and very popular style, it seems to us that studies should be dedicated to them and to their potential use as a science communication tool. The analysis of this activity can help us to understand how public builds its images of science and scientists and give support to understand better the complex relationships in the interface science-culture-humanity. In particular, in the domain of modern biology, it is verified that the manipulative power of science on life can evoke inquietudes, controversies and diversified attitudes in the general public. We don't want to mean that public attitudes and perceptions are a direct reflection of visions transmitted by the mass media. The problem indeed is very complex, as showed by several

authors (see, for example, Peters, 1998; Priest, 2001); many other factors such as cultural, religious, moral, familiar factors, etc., can also influence the setting up of individual values and attitudes.

Our objective in this work is to analyze the advantages and limitations of one TV soap opera as a tool for communicating issues related to human cloning (Massarani and e Moreira, 2002). Our object of study is *O clone* (The clone), broadcast from October 2001 to June 2002,¹ by TV Globo, the main channel in Brazil, reaching an audience of approximately 85 million people per day.² *O clone* is the soap opera with the highest audience in Brazil in the last six years (Mattos and Daniel, 2002). Its is also currently broadcast in U.S., on Telemundo, the Spanish-language television network that reaches 2.8 Million Hispanic households in the United States (with English subtitles in most areas) (Triunfol, 2002). As the title suggests, *O clone* is related to a biotechnology issue – in this case, human cloning – and both science and scientists are deeply represented.³

The methodology we used in our study was an 'exhaustive qualitative methodology': we recorded every chapter in videotape and identified every part related to science and scientists. Then, we undertook an analysis of the recorded material aiming to answer the following questions: What and how are scientific issues and genetic techniques presented? What image of scientists is being transmitted? How are ethical and risk aspects being considered in *O clone*? To what extent is it possible to put in debate, in an appropriate way, such a controversial subject, involving so many different aspects, using a fanciful soap opera to discuss the topic? Finally, we aim to propose the following question: is it possible that a soap opera like *O Clone* can be used as a significant science popularization tool?

In the following items, we will briefly describe the soap opera, including some comments on these questions. We also considered the opinion of several geneticists who analyzed the content of this soap opera.

II. The soap opera script

¹ The authors have no participation at all in the development of this soap opera. They choose this soap opera because it has an important scientific issue as one of the main subjects of the script and in virtue of its impact in the Brazilian audience.

² Ibope <<http://www.ibope.com.br/>>, the Brazilian Institute responsible for public surveys.

³ Further information on "O clone" is available in http://redeglobo3.globo.com/oclone/frm_home.jsp

The story in the soap opera begins almost two decades ago. So, according to the script, the first human clone was obtained by a Brazilian scientist before the 1997 birth of Dolly, the sheep – a claim that possibly is a nationalist expression of the Brazilian science. This possibility was also shown in the announcements that were broadcast before the first chapters of *O clone*: the announcements were in the format of TV news, leading some people to believe that, in fact, a Brazilian scientist had succeeded in cloning a human being.

The main character representing a scientist in the soap opera is Dr. Albieri, a very lonely person, unable to love a woman after losing his fiancée when he was young. He is a geneticist and an owner of an artificial insemination clinic. He had a strong influence of religious issues when he was a teenager, studying in a seminary, but later he became an atheist. Here are some passages involving this character in the soap opera: "The theological school drained my ability of believing in magic or sobrenatural issues. To me, the possibilities are only scientific, or they don't exist."⁴ According to Dr. Albieri, talking to a journalist about his decision to go to the seminary, he always had the necessity of controlling and dominating nature. He says: "We feel ourselves very small before catastrophes of nature, diseases, death. How to do to control this? Then, I associated myself to God, because I believed that it was a way to be protected and I would be able to find in this communion a logic for this movement of life". The journalist asks: "And was you able to find out such thing?" Dr. Albieri answers: "No, because I found out that God is something existing in my mind. God was born of the need that I had to control, to dominate death. Then, I decided to dedicate myself to genetics."⁵

The starting point for the story in *O clone* was the premature death of Diogo, one of the 18-year-old twin sons of Leônidas, a very rich man. Dr. Albieri – close friend of Leônidas – decided to clone the brother, Lucas, arguing that Lucas's copy is Diogo. After his birth, Leo, the clone, disappeared for many years. But he showed up again when he was 18 years old, exactly the same age as when Diogo died, unmasking Dr. Albieri's secret. Finally, when Leo found out that he was a clone, some dilemmas arise, for example the paternity and maternity issues. He had existential problems because he considered himself only a copy and tried to define his own identity. Also, he felt quite uncomfortable with the way people look at him after knowing he was a clone. Furthermore, making reference to the

⁴ Chapter 3. October 3, 2001.

fact that it was discovered that Dolly the sheep was prematurely aging, Leo had to face the doubt of how long he would remain alive. This is an example of how real and contemporaneous issues were explored by the scriptwriter in the same moment that they were in fact happening. Other two examples approached in the soap opera were the announcements done by the American enterprise Advanced Cell Technologies that they succeeded in cloning embryos and the statements done by Severino Antinori that he would be able to cloning human beings.

III. Scientific contents

O clone tried to explain to the general public several scientific issues, such as cloning techniques. To accomplish the explanations, in some situations the author adopted a didactic approach: there were even a scene in a classroom, where a character adopted a typical teacher behavior and tried to explain, for children, scientific matters by writing at the blackboard.⁶ This strategy, however, led to a fragmentation of the story and we can in a certain sense say that there were two soap operas in *O clone*: the first story talks about science, with the image of the scientist drawing on the stereotypical caricature – a man with a white coat, immersed in his laboratory and far away from reality; the other story follows the usual rhythm of the soap operas, with forbidden romances, betrayals, etc.

Other scientific themes related to cloning are showed in *O clone*. For instance, the influence that genes would have in the determination of individual human behavioral was discussed several times, sometimes in a provocative and interesting way, stressing the existing scientific doubts on the theme. On other hand, in one chapter, expressing a genetic determinism, Albieri states that there is a gene responsible for chemical dependence – a reference of drugs and alcoholism, other issue deeply discussed in the soap opera.

Genetic memory also was explained to the public and the importance of social and cultural aspects stood out in this matter. But frequently the discussion was quite naïve. For example, in several scenes the matrix (the cloned person) and the clone scratched their right eyes at exactly the same time. The clone – as the matrix – enjoyed playing guitar, a portrayal that was possibly used as a tentative way of suggesting a hereditary tendency for musical aptness. In another simplistic representation, the clone was deeply fascinated by

⁵ May 27, 2002.

jade (the stone) and the life of Muslims (a clear reference to the matrix's forbidden love, one of the main themes throughout the soap opera).

The scriptwriter, Glória Perez, introduced as well the therapeutic cloning, in this case as something positive and useful. Dr. Albieri justified the use of this technique: "How many children are dying because of genetic diseases? Some of them, as is the case of cystic fibrosis, with no medical support... The therapeutic cloning will eliminate diseases."⁷

Although the scriptwriter tried to show the presence of trials and errors in science – some ova were lost in the cloning experiment – the scientist succeeded in cloning a human being in just a couple of hours. According to Lygia da Veiga Pereira, a geneticist at the University of São Paulo, *O clone* induces people to think that cloning is a simple issue: "Albieri placed only one embryo in a unique woman and he succeeded. And the clone is Leo, who is a beautiful man." (Segatto, 2002) She affirmed that in real life, even with several volunteers participating in an experiment, the probability of generating a human clone is very small and a malformed child might be born with high probability.

IV. Ethical and risks aspects

The ethical aspects of cloning human beings appeared in the very beginning of the first chapter of the soap opera.⁸ Dr. Albieri was giving a lecture and affirmed: "The departure was given. Now, we, the scientists, have as duty to continue developing those researches and do not fall in temptation of surpass the limits imposed by ethic". Few minutes later, the audience will know that he succeeded in having the first animals clones in Brazil. Afterwards, when he arrived in his silent and lonely home, lost in his dreams, he imagined what it would be happen if he also succeeded in having the human cloning. Then, still in his dreams, he imagines he was presenting a hypothetical lecture in which he would say: "For a long time, the science already knows what is necessary to do an human clone and, when something is technically viable, there is no reason to not to do it. I just was the most daring scientist among my colleagues". Then, in his dream, the audience noisily applauds him.

⁶ Chapter 3. October 3, 2001.

⁷ May 27, 2002.

⁸ Chapter 1. October 1, 2001.

Back to the reality, Albieri looked at the mirror and said to himself: "To do the reflex of Narcissus go out from the waters. The image going out the mirror and living together with me. And the soul? Would it has its own life? Or would I be split in two bodies? Would it be a miracle of God or an ambush of the human vanity?" Still in the same chapter 1, when his godson asked it if it was possible to clone a human being, Albieri answers: "Technically it is possible. But who is interested in? It would be not ethical."

This initial part of the soap opera illustrates an ambiguity will mark the chapters until the end: After all, which is the point of view of the main scientist, Dr. Albieri (and of the other characters), toward human cloning ethical issues? Is it ethically acceptable cloning a human being? Acceptable or not, the fact is that in the soap opera a human being clone is made.⁹ Afterwards, Dr. Albieri tried to argument in order to persuaded other people that the ethical resistance against some new issues in science could be changed. He said that if science would be stopped because of ethical issues it would be not able to progress. He used as an example the fact that in the Middle Age the body was considered sacred and open a body was considered a crime.

In the soap opera, Dr. Albieri produced the cloning in a secret way: he didn't tell his supposed success to his lab partners, his friends, his wife (he married with the secretary after being shocked with Diogo's death), or even to the woman who carried the baby – a poor black woman, assisted by the doctor at the request of his wife, to whom he guaranteed a very desired pregnancy. Significantly, the name of the character carrying the clone was "Deusa" (Goddess). Throughout *O clone*, the ethical issues related to the secret scientific experiment were mentioned several times, including the fact that Dr. Albieri cloned a person without consulting him.

Dr. Albieri became a tormented man because of his secret. He feared that the clone would be defective; he feared also the way that people would react when they were aware of his experiment. In this case, *O clone* framed the dilemmas involved in cloning as individual issues, specifically centered on the scientist (Albieri), and did not give them a collective perspective. The risks of the techniques that are utilized in cloning were considered in a very restrictive way and, in general, were limited to concerns about whether that specific clone would have physical defects.

⁹ Chapter 17. October 19, 2001.

V. Scientist's opinions

It would be very useful survey Brazilians to evaluate the impact of *O clone* as a science popularization tool. We do not know of any study of public's reactions or of how and whether this soap opera changed the way Brazilians understand cloning and their attitudes toward it. We do know that the program evoked mixed points of view from scientists. Márcia Margis, for example, a geneticist at the Federal University of Rio de Janeiro, described the soap opera as "an interesting tool for evoking the curiosity of people toward cloning, stimulating them to look for further information." (Massarani, 2002) But Mayana Zatz, a geneticist at the University of São Paulo who gave some advisers on ethical aspects for the soap opera team, presented a different point of view (Massarani, 2002). She expressed concern that the story-line, as presented, might stimulate people to try to clone themselves or someone else, which could lead to positive social acceptability of the technique. She wishes the clone in the soap opera was a defective person, instead of a beautiful gallant. Zatz argued that it would be interesting that *O clone* could also promote serious discussions on the theme, for example by alerting viewers to health risks in a cloned individual. Zatz also stressed that *O clone* lost a good opportunity to explore the differences between therapeutic cloning and reproductive cloning.¹⁰

Zatz believes that the *O clone* is not an effective science popularization tool. She says that the soap opera presented several mistakes. One example of that is that several episodes showed both the twins and the cloned teenager as having a hereditary skin signal (inherited from the twins' mother) exactly in the same position in their body. "This is almost impossible. We know that a skin signal is a somatic manifestation that appears in the individual life. Besides, who met twins before knows that in general is a skin signal that differentiates each one of the other. (...) Furthermore, in the soap opera, the skin signal is suppose to be inherited from the mother and linked to the sons through the chromosome X. (...) We don't know any trait linked to X related to the production of skin signals. They could give a actual example such as daltonism and use the opportunity of educating the audience."¹¹

¹⁰ Meeting on human cloning, June 2002, in Brasilia, organized by the Federal Senate, intended to help the Brazilian Congress to analyze various proposals that are being made to change the law on human cloning.

¹¹ "Clonagem humana: alcances e limites", interview to ComCiência <<http://www.comciencia.br/>>

Tania Araujo-Jorge, a researcher of Oswaldo Cruz Foundation, pointed out another scientific mistake. She was so involved with the soap opera that she suggested, through a letter sent to Glória Perez, how to solve one of the main impasses in the soap opera. Leônidas, the father of the twins, went in Court and demanded the paternity of the clone for himself and the maternity for his first wife (already dead). Deusa desperately fought to keep the maternity, but as the cloned teenager had the Leônidas DNA, she was almost losing the hopes. What Araujo-Jorge suggested was to use "the genetic information of the mitochondria as an indisputable proof of the Deusa genetic material in his son Leo" (Araújo-Jorge, 2002). However, although the scriptwriter used the idea, three mistakes were exhibited in the lawyer character speech, who was representing Deusa in the Court: She said that the test would analyze the DNA in the 'plasma' (instead of 'cytoplasm'), because in the plasma there is one specific cell (in the plasma there is no cells at all, because the plasma is the liquid part of the blood with no cells) called mitochondria (the mitochondria is not a cell, it is a component present in every cell of our organism).

In the last chapter of the soap opera, of course several minor dramas were supposed to end as a love story. There was a sort of expectation in the public and in scientific community about the future of the clone Leo. Would he marry with the beautiful girl? Would he precociously die? The final solution found by the scriptwriter was that Dr. Albieri, after having his experiment known by his colleagues and the mass media, was frightened to be punished by the society and run away in the Moroccan desert. Leo, finding himself as someone not adapted in the society, followed Dr. Albieri.

VI. Final comments

As we tried to show in this paper, indeed *O clone* has big limitations. Science and the scientific process are sometimes presented in a simplified and individualized way; scientists are showed several times as the usual stereotype of being male with a white coat, immersed in his laboratory and far away from reality. The collective aspects of modern science are not stressed and more general factors related to the modern technology, such as economical and social issues, are also not considered. The objective of the soap opera of introducing the cloning theme to a large audience proved that it is not necessarily synonymous with a high quality and clever debate. However, it should be remember that *O*

clone is a entertainment program – not an educational tool – aimed to a wide and very diversified audience in a country in which science is not the favorite subject. Furthermore, in the Brazilian scenario, the audience has generally a very low level of scientific education.

But, as we try to show, even with the recognized deficiencies, *O clone* allowed important ethical and risk issues in contemporary science to be put in the public eye. The genetic determinism problem was discussed several times stressing the existing scientific doubts on the subject. As the geneticist Márcia Margis said, this kind of TV soap opera can in fact be an interesting tool for evoking the curiosity of people toward cloning (or toward other important issues in modern science) stimulating them to look for further information. Particularly in Brazil, in a moment in which themes such as genetically modified crops have a growing social and economical importance and legislation for therapeutic cloning is being created, the public discussions about modern genetics and its impacts must be stimulated. Daring actions such as *O clone* could, in association with other tools and submitted to ongoing criticism and improvement, open new paths for science popularization activities.

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