Animation & Neurocinematics:* the visible language of E-motion-S and its magical science.

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Abstract

We love movies because we like to jump from our “reality” to live a dream, a parallel universe that inspires us. We long for adventure, excitement and answers to quests… That’s the magic of cinema; it makes you believe what you see and over all, FEEL it. As Antonio Damasio said-"we’re feeling machines that think"-(Damasio, A. Descartes error). Such feelings come from the interpretation of the emotions in our bodies. Emotions are our universal language, the motivation of living, the key to what makes a movie successful and truly an art piece that you will remember because moves you. Animation, indeed, can be considered a social/ emotional learning media, which goes beyond the limitations of live action movies. This is due to the diversity of techniques, and its visual plasticity that constructs the impossible. Animators are not real actors but more like the midwife who brings the anima into aliveness, which requires knowing how emotions work. Ed Hooks as an expert in training animators and actors, always remarks: “emotions tend to lead to action”.

In this paper we want to argue that by producing animated films, as we watch them, cause a stronger effect, not only in our brains, but also in our bodies. By using animation as a learning tool we can explore the world of emotions and question beliefs, feelings and actions in order to express our voices and enhance our communication, and well-being, both, internally and with others. Animation can be the visual expression of the emotions in movement, manifested as a visual thinking media.

Introduction

Why does it matter that we know about emotions when making movies? Can an animation help us to understand them better? Even if we naturally learn by telling stories, people may forget words, actions and events, but they will never forget how something makes them feel. Movies touch our hearts, and also our minds.

“Whether we hope to spot concealed emotions or seek compassionate connection, our ability to see and respond to others' often unspoken feelings is central. This ability can be trained. We provide the tools”. Paul Ekman

We propose and use animation as one tool. Emotional regulation is extremely relevant since influences our decision making and problem solving skills. Our well-being or happiness depends on this mysterious ancient world of emotions connected to our way of thinking, and we can explore it through the magic of animation. Studies from Talma Hendler, Zack Jeffrey or Uri Hasson, evidence of how watching movies activate specific areas in our brain related to different emotions. This new neuroscience of filmmaking, baptized as Neurocinematics by professor Hasson (Princeton University) is becoming more popular among filmmakers and scientists, although there are no specific studies regarding to the creative process of animation, with focus in how animation and emotions are connected during the art production.
The Animated Learning LAB in Denmark, has been working on this issue by developing new paradigms of teaching and film production, to learn different subjects and human values such as: mindfulness, compassion, resilience and emotional intelligence. We define animation as a social emotional learning tool; animation is the emotional energy in movement that provides the illusion of life, a soul. It’s an artistic thinking-feeling media, which provides great opportunities to experiment, by playing, with different perspectives, creativity and innovation.

Before going into the current fascination with visual effects and the most advance technology in movies, we should recall the art of film making started with silent feature films from Méliès, *A trip to the Moon* (1902) or Chaplin’s *The Kid* (1921). In these films and others, the tools that directors could count on, to show the audience an idea or feeling, were the movement, action, and music before dialog appeared. Animation happened even before those movies were produced, in the Upper Paleolithic caves of Altamira or Chauvet (France, ca. 30000 BC). Those were the first attempts to express the idea or feeling of how an animal look like, furthermore, in movement. Some anthropologists, as Marcos Nadal (University of Vienna), believed that those representations were probably like plays where they could rehearse a situation like hunting. Those cavemen were learning through visual storytelling, most likely making their own sounds and pantomime, before any language existed.

Animation can be as abstract as in its origins and go beyond the limits of the physicality of live action movies, for which we usually see a hybrid of productions that need animation to re-create the impossible worlds that we imagine in our brains, such as *Avatar* (James Cameron, 2009), or possible recreations from the past, such as *Jurassic Park* (Steven Spielberg, 1993). Directors like Ray Harryhausen (United States) and Jan Švankmajer (Czech Republic) were experimenting with animation and live action before big companies like Disney produced the well-known *Mary Poppins* (1964), *Who Framed Roger Rabbit* (1998) and *The Three Caballeros* (1945).

Animation acts as the bridge between reality and fantasy, it makes us feel dreams as real life, thanks to the emotions, which we can learn in a more abstract form than could ever be imagined. The short movie *The Dot and the Line: A Romance in Lower Mathematics* (Chuck Jones, 1965) is a very harmonic story where we see through the simplest elements of visual composition, the pure expression of feelings in movement.

In the following lines, we will briefly present the relationship between animation, neuroscience and emotions, which we establish and work with during film productions at different levels. We obtained very positive results that motivate us to share and ask scientists to keep working with artists, like Paul Ekman who has explored with his studies the universal signs of emotions and facial expressions in different cultures. Antonio Damasio pointed out that scientists record life as it is; yet artists express it, and with knowledge. Artists, indeed, can be the scientists of preconceiving life. We want to provide a big picture of our vision and studies to see, how we can use the knowledge of producing movies to change our perception, and learn to feel more and understand our emotions, so the relationship with the external world.
Methology: Working beliefs-feelings-actions through animated productions

“Life is a tragedy when seen in close-up, but a comedy in long-shot.”
Chaplin (1889-1977)

In this section we want to share our observations and method during the creative process of making an animated film.
The Animated Learning Lab in collaboration with educational institutions in different countries, such as The University Polytechnic of Valencia; members of UNICEF such as George Mcbean, and creative professionals, has been working on tailoring animated workshops for students of different ages, from toddlers to post graduate students, and professionals, from very diverse areas. This makes a richer experience at the time to exchange ideas and activate problem-solving skills, which shows us interesting ways in which animation is a very powerful tool for building social relationships and increasing creativity. To answer why we connect animation, emotions and neuroscience, we would like to explain the relationship between our brain and emotions.

Richard Davidson (University of Wisconsin), Daniel Siegel (Mindsight Institute, California) or Joe Dispenza (DC), have been studying neuroplasticity and researching the effects of meditation and emotional regulation for an optimal learning and well being. As we mentioned before, emotions affect our decision making, if we learn how to identify the emotions and regulate them, we will be able to develop resilience and increase our sense of fulfillment and contentment. We found that animation can help us as a tool, to learn and regulate our emotions, and be able to change perspectives and act differently through consciousness.

The most recent Pixar movie, Inside Out (2015) summarizes our premises. Furthermore, some schools are using the movie to talk about and identify the emotions. By watching this movie, we learn to identify certain emotions, in this case four from the primary six emotions that Antonio Damasio classified in his research. We get to know why and how the characters behave, what’s inside our heads and what kind of feelings and actions emotions can create. We understand the importance of accepting and balancing negative and positive emotions because they need each other. The same thing applies to being more rational or emotional; both go hand-in-hand and work together as we can see in Reason and emotion (Disney, 1943). Some great films as Party Cloudy (Pixar, 2009) explore feelings and ideas, friendship and resilience, with a clear reflection by using images over words. In Luxo Jr. (Pixar, 1986), the first true experiment where John Lasseter researched how to apply emotions to 3D objects. Most recently, in the independent film-making arena, we find a movie, which has a programme for teachers to share wisdom about life, The Prophet (2015, Salma Hayek). The film is the beautiful journey of a poet whose words resound in peoples hearts. Words can put him in danger and make him lose his freedom.
It’s a movie about free expression, change, love, and the importance of passing our culture and knowledge through an art form, in his case, its poems. Animation is starting to be used more and more as a learning medium not just by educators but by filmmakers who are becoming aware of its power.

Other scientists, as Davidson and Dispenza, explain how our brain is capable of changes with every experience and by repetition, creating new synapses and patterns that can determine new behaviors. Animation is all about repetition and focus; it’s a transformative process where we connect our minds to our bodies. During any creative process, the energy flows where our attention is focused; some people are more kinesthetic, others are attracted to sound or are more verbal; these are some of the seven intelligences that Howard Gardner (Harvard) acknowledged, all can be explored during the creation of an animated movie.

Nevertheless, we can use animation as a practice of mindfulness. We have to observe ourselves and others to be able to adopt the character that we must animate, or, have enough information to be able to design a new original character, which has to be believable and engaging to the audience. This engagement happens because our empathy and mirror neurons (Hasson, Speaker–Listener Coupling Model). By mimicking and recreating the gestures of humans or animals through emotions. This, despite very subtle differences between cultures, is our basic human essence. Paul Ekman has been working for major animation studios, due to his relevant studies about facial expressions, emotions and deception. Animators have been using his knowledge to better understand the nuances of expressing feelings within different contexts and situations. This is relevant to exaggeration and having gestures to entertain the audience, as the story unwraps. Our understanding about the story itself is a reason for case study; to question beliefs, decide which emotions intervene, and what actions are going to happen to resolve the conflict. Life as it is, with a touch of imagination. Walt Disney Studios used to test future animators with an assignment, where they had to express different feelings and emotions using a sack of flour. A clear sample of how we can learn about emotions from the inside out, is by doing, and from outside in, by watching movies.

We set up groups of three or four students, depending on their age and timeframe to work. Each group had to discuss an idea and make a film out of it. Different roles were distributed amongst themselves, if they’re not children under 9-10 years old. Ateliers are taught in a constructivism learning method (Vygotsky), to animate in a very intuitive way, by playing with the software and receiving small lessons and support from the tutors. We focus on four main animation techniques: pixilation, cut out, clay, and 2D, to keep them in touch with analog materials and avoid working just with computers. We encouraged the importance of using kinesthesia when possible since it helps to focus, and, later on, feel rewarded when they see a product, physical and visual.

Animators develop the four main components that Daniel Goleman acknowledges in his definition of emotional intelligence: self-awareness, social awareness, self-management and relationship management.

Naturally our brain shapes itself by experiences; it is always transforming and creating new synapses, even as we get older. The capability for it to be plastic and, to change, is what neuroplasticity is (Richard Davidson, Wisconsin). When we work on making movies, we put ourselves as directors or animators in hypothetical situations that, either, are real memories or fantasies. In either case they...
are an excuse to experiment in a safe context, situations which we could be involved in, provoking re-actions and, inducing feelings and ideas that we can question by reflecting, especially working in groups where different perspectives are factored in.

The creators have to think and feel the way their characters must behave. During this process, they’re not just passive observers but active protagonists. As a result, the learning experience is stronger and their effects are more intense regarding comprehension to why a character acts in a certain manner, and how they should express ideas and feelings in accordance to that behavior. The results in comprehension of emotional status are higher than when watching movies. While watching a film each viewer make a lecture of the scene based on his perception (from his/her background). In other words, they bring their vision from what they personally have lived; by doing animation, they become the character, forcing them to get his mindset and imaging how the character is feeling. Feelings are no longer a personal interpretation but a rehearsal for being the character, even though there may be certain level of subjectivity while acting.

Animation acts as a metaphor to transport the ateliers to live other people lives, through their minds and bodies. We usually hear,”You don’t understand because it never happened to you”-and, somehow this is true since the process of embodying feelings and ideas, is always more real when one has a personal experience. The reason is there is a trace of that past event through all the senses, instead of being an hypothetical thought or imagination. In this matter the creative process is more important than the quality of the final result, because it makes you feel and obtain knowledge by experience instead by just listening or viewing.

At the end of the production students, learn technical aspects related to animation and film making than can be applied to real life. Movies are like life itself, a work in progress, and we create our own stories as recreations of past, present or future moments. We become the creators of personal realities, by editing those moments and putting them together to make sense of what we live (1920, Lev Kuleshov), and our brain doesn’t distinguish what is real or fiction. Perception and cognition are crucial in understanding emotions and getting an optimal communication within the self and others. We edit and change our realities (Jeffrey Zack, The Cognitive Neuroscience of Film).

By making movies we study beliefs, emotions and actions through the stories and the design of characters and backgrounds. In animation we work with what big studios call color script, which shows the whole film main colors and lights visualized in key frames from the primary scenes. Nowadays, we can find the whole movie compressed as a barcode, providing the whole spectrum in one image. Animators learned to evoke emotions by using different technical elements of composition such as: color, warm for love and positive feelings, more blue or darker for sad ones, in Beauty and the Beast (Disney, 1992) the castle changes from very dark bluish colors during the spell, to bright and warm towards the end of the film. Round shapes are more suitable for children; they are, soft and calm as we see them in Lilo ad Stich (Disney, 2002), while more angular shapes convey a cold and aggressive feeling. More light is associated with happy and relaxed situations, such as in Tangle (Disney, 2010) where everything is inspired by the painting of Fragonard; the main colors are pink and soft with an especial glow. Music is extremely relevant as well as many other elements, such as rhythm.
Animators start to be more aware of the psychological and symbolic meaning of these components as they work on productions. Even camera movement can create and enhance contrasts in different moods.

To summarize, life in animation is a safe game where we play somebody else; we’re free and focus on what we do. Being aware of what happens brings a more peaceful status of relaxation to face problems and make decisions. We work on resilience and the relationships between the world and me, and others, as well as the connections between our thoughts, feelings, and actions, in order to maintain balance. Animated movies can teach us, how to feel like children again, and inspire us to become our better selves, even when we are already grown-ups. It’s a chance to find ourselves in somebody else’s eyes, so we can meet others within ourselves by empathy, which is the key to our emotional system. Animation is the illusion of life; we can learn to live with more illusion each moment by doing animation.

Animation is an excellent art form for self-introspection and self-development in different levels, which we can use for children and adults. For filmmakers and professionals of other fields, we must be aware of this power and its influence in people’s lives, especially children. Keep researching with scientists to explore new opportunities. Animation can be the bridge between sciences and arts as long as scientists keep questioning which direction they can go with this media. Our only limitation is our imagination.

Results

Animation improves our cognitive functions and awareness of being. Students or professionals learn about emotions and feelings (especially the difference) It enhances social skills such as: cooperation, compassion, sharing, and tolerance, listening and working in teams. Animation provides a more natural method to reflect on actions by having fun, without judgment. Communication becomes better within the teamwork by sharing and listening. Expressing feeling through animation encourages students to find their voice when there is some impediment or difficulty, physical or psychological. The students raise their self-esteem and feeling of reward by producing a final product. Learning skills, as concentration, focus and learning improve considerably after a programme is complete. Animation promotes the creation of personal mindsets with a critical view to question audiovisual information. Animation students get greater knowledge and comprehension of visual literacy when watching movies or visual material. Creativity increases in all cases, including the most introverted animators.

Conclusions and Discussion

Working with animation provides the tools to train our minds and bodies, by applying the emotional intelligence. It is a bridge between sciences and arts. Animation is an excellent medium to teach visual literacy and develop critical minds to avoid manipulation. Within art therapy, it works as an excellent new approach with autistic children and any other condition that is an obstacle to communication. It is a mindfulness media and tool to put it in practice and bring consciousness from the unconsciousness. The creative process of an animated movie helps to develop important social skills. Animated movies serve as metaphors to communicate when language barriers are an impediment. Animation should be considered a social emotional learning tool, to be incorporated in regular curricula and implement knowledge about emotions.

By enhancing, exploring and creating new ways of communicating with animated productions, - we can contribute to the creation of happier communities with the necessary tools to obtain an optimal sense of resilience, in order to cope with life challenges and-, learning to be ourselves and respect others. My intention is to acknowledge how powerful and helpful animation is as an emotional learning media, not just on
curricular subjects but on daily life basis to apply emotional intelligence, which can bring us more peace and happiness within ourselves for an optimal and healthy personal development.


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Bibliography


