Toy hacking: a catalyst of children's self development

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Abstract

This paper is a work in progress about the planning conceptual stages of 'toy hacking', examined from an original, practical and a theoretical perspective. The toy hacking process could become a catalyst of self-development for children re-purposing a familiar object for which they had a strong emotional attachment. Makerspaces and Fab Labs are entitled to become the social setting where it is possible to make a new kind of social ritual take place. Toy hacking could provide children with an innovative way to experiment, discover themselves and get into social interactions with peers through the joy of making.

Author Keywords

Education; Toy hacking; Maker Movement; DIY; Rite of passage; Fab Lab; Child development.

ACM Classification Keywords

K.3 COMPUTERS AND EDUCATION; J.4 SOCIAL AND BEHAVIORAL SCIENCES

Introduction

This paper is a work in progress about the planning conceptual stages of 'toy hacking', examined from an original, practical and a theoretical perspective. The practical idea comprises the modification of soft toys owned by children using pre-programmed circuit boards as a "rite of passage". The first testing field of my research will be the European edition of Maker Faire (Rome), which will take place in September 2014.

Children will metaphorically kill their soft toy (symbol of their childhood) to create a new interactive object, but also a new self. The toy hacking activity can now be seen as an act of self-development, in other words a proper "rite of passage" as explored by Arnold Van Gennep. In this paper I explore the theories that inspired my concept and pose the following questions, in order to start creating a theoretical framework: can toy hacking become a new socially accepted "rite of passage" for children approaching puberty? Acting directly on a child comfort object, e.g. a soft toy, could the activity help the child in developing a new more mature self and help them interact with other children? Toy hacking could provide children with a new mindset striving toward openness to experience new worlds and new ways to communicate with his or her personal self?

Rite of passage: old vs new inheritance

We should firstly clarify what a rite of passage is and how hacking an object, manipulating its essence and meaning to a child, will conduct him or her to adolescence. Arnold Van Gennep first introduced the concept of *rite of passage* in 1909, in his book called "*Rites de Passage*" [1]. Van Gennep ascribes the social rites into a consequential series of three stages:

1. *Pre-liminal rites* or rites of separation;

2. *Liminal rites* or transitional rites;

3. *Post-liminal* rites or rites of incorporation.

Behind each ritual that involves a modification of social status, Van Gennep remarks on the importance and sacredness of the simulation of death and resurrection to gain the access to a new social condition. During the *pre-liminal rite,* the individual leaves behind something related to his or her previous stage and breaks his or her routine and practice. This phase can be read as a metaphorical metamorphosis from something already known into the unknown. In this case, it is crucial to consider the *liminal* phase as a transitional phase where the individual builds up his or her personality from a *tabula rasa.* The individual has to follow a strict series of rules to make the passage happen, under the control of a master of ceremony who is the personification of authority. Then the individual will arrive at the *post liminal* state where he or she is socially accepted and integrated with his or her new identity.

Turner (1967) [2] compares the traditional ritual experience described by Van Gennep as being socially driven, with a strong emphasis on the collective experience (*liminal rites*) to rituals in modern societies: called *liminoid* experiences. The *liminoid* experiences are instead more individualistic, with a strong social criticism. For this reason, individuals tend to be more closed towards others, cultivating their inner world rather than opening themselves to others.

The toy hacking activity, structured into a series of workshops delivered in Fab Labs and Makerspaces, but also available on demand online, could refer to a more traditional (but also new) and collective experience, which could build up a strong sense of belonging amongst the community of peers not only in the domain of physical world, but also online. This approach is already a part of STEM (Science, Technology, Engineering and Maths) and STEAM (Science, Technology, Engineering, Arts and Maths) curricula, as an innovative approach to design thinking and engineering[1], but maybe we haven't explored yet the potential of this curricula from an anthropological, sociological and psychological perspective.

Physical presence and participation of the developing individual to a complex pattern in peers' community are determinant for children development: "*Learning and development are facilitated by the participation of the developing person in progressively more complex patterns of reciprocal activity with someone with whom that person has developed a strong and enduring emotional attachment and when the balance of power gradually shifts in favour of the developing person"* (Bronfenbrenner, 1979, p. 60) [3]. In an educational perspective, situated into the Fab Lab community, which in a way is far from institutional education, the development of workshop structured as a proper "Rite de passage", with a strong emphasis on instructional materials (booklets, video tutorial available on demand) that will set out clearly how the process of the ritual, and the roles of every individual involved. Teachers/educators will play a key role in the process, because they can be considered facilitators, helping children pass through a new phase of their life in a socially structured context providing with learners support on soft/hard skills (as a master of ceremony in a ritual does), but also supporting their psychological changes. This approach could fight the process of de-materialisation of learning, pushed towards the immateriality of apps and tablets' screens (concern

[1] STEAM-e-ZINE, 2-1, 2014 http://steam-e-zine.com/index.php/toy-hacking-3

aroused by teachers about the lacking of manipulative skills of the new generation of children). [2]

Transform your toy to transform yourself

Could acting out the death of child transitional object and creating a new emotional relationship with a toy itself throughout the hacking process facilitate the development of the new self and the interaction self/others in a social and mediated space? The Makerspace, and specifically the Fab Lab, could indeed become the ideal scenario where this ritual process could take place, and where we should start investigating through a qualitative research.

During the developmental stage, which starts from early years, toys play an important role in helping children understand their inner world and surrounding environment. Winnicott describes the comfort object [4], also called transitional object, as a physical object that helps the child replace the mother-child connection. This separation gives him or her the chance to experience for the first time a relative sense of independence, separating "me" to "not-me", and creating a new relationship with the caregiver, who is "other" from self. The transitional object represents also a replacement of the caregiver, if used during phases of stress and anxiety. So could the toy become a symbolic social aggregator, and at the same time catalyst of self-development in an informal educational context?

Toys have already been used also as a "learning material" in the Montessori Method, to build up skills, abstract thinking and add a deeper dimension to playing, focusing on the importance of material selection, the colours used, the dimension and weight, providing learners with a set of stimuli able to improve their learning experience and supporting the senses and motor system development, constructing their knowledge through an active dimension of learning situated in a sociable environment.

Child development and their will to be open to new experiences, pass through experimentation and contacts with artefacts. Those artefacts put in place an emotional relationship between a child, his or her mediation with "other" individuals and the surrounding environment. Therefore, a toy hacking experience could become next step to self-development through interaction with objects. This experience provides a new conceptual and physical, dimension where children can express his or her self, interacting with other children, through the process of creation. Many young makers post their DIY projects online daily as a proof that the urgency of making develops not only their skills, but also it could support the creation of a digital community where they can "show and tell" what they have done. It is the case of "Sylvia's super-Awesome Maker show!"[3] a web-show created 4 years ago by a 13 years old girl, or online platform like DIY.org created by IDEO.

Building a peer community, not only in the digital space as Lave & Wenger already proposed with Community of Practice (1991) [5], but also in the actual physical space, the strength of this new interaction is framed into the Fab Lab context. Web and physical computing, enclosed into an open sourced, connected world have already played a determinant part in the hacking process, from a bottom-up perspective, becoming in a way a brand for the new generation of people that express themselves through making, acting out a social ritual inside Fab Lab and Makerspaces. Their toys after the "surgical" hacking process, socially accepted and supported by peers community, will be considered as objects with a new soul, Toys 2.0... and pre-programmed circuit-boards kit such as littleBits, could facilitate the process of hacking even for younger children, because no programming skills are required.

[2] Ratcliffe, Rebecca. *Children can swipe a screen but can't use toy building blocks, teaches warn.* http://goo.gl/wXPm7q

[3] Sylvia's super-Awesome Maker show! http://sylviashow.com/

"*Making is* - therefore - *connecting*" (Gauntlett, 2011) [6], because children involved in the process of hacking their own toy, will be a part of an actual community involved in this creative passage to a previous status to another. They metaphorically will assist in the symbolic death of their comfort object (*pre-liminal phase*), which will be surgically improved and re-assembled to generate a new toy (*liminal phase*), which will gain a different meaning to him or her (*post-liminal phase*). The transformational act of the toy's essence calls the children into question: challenging them in finding new meanings to their inner world, thanks to peers' community and educators' psychological support.

That means for them abandoning their comfort zone towards their independence to fulfil their new needs as teenagers, acting out the death of their toy surgically and creating something innovative from remains of their childhood toy. Fab Labs, and in general Makerspaces, could become the places responsible for this kind of ritual, that could put in contact children approaching the complicated transition from childhood to adolescence in a safe and playful environment.

Conclusions

We should re-discover the importance of toy hacking as a sociable rite of passage for children; in the domain of Makerspaces and Fab Labs to investigate how community of peers (in presence and online) supported by educators and mentors can help children in the transitional phase between childhood and adolescence. The toy hacking process could become a catalyst of self-development re-purposing a familiar object that has a particular emotional meaning to the child.

This new approach situated into a social, structured and controlled environment (such as a Makerspace or a Fab Lab), could help the children overcome the transition from childhood to adolescence, providing a reference physical space that could embrace this new approach, building up an experimental blended curriculum for those "particular" learners that need to evolve and grow up. Volunteers (educators and teachers) could become facilitators of this journey, exploring psychological aspects linked to the object itself, providing a cross support not only in terms of soft/hard skills (as a master of ceremony in a ritual does), but also supporting their psychological changes and exploring the boundaries connected to a macrosystem of values and attitudes that belongs to puberty (Brofenbrenner, 1994) [7].

Makerspace and Fab Labs are entitled to become a social scenario where is possible to make a new kind of social ritual take place, integrated by online presence.

Toy hacking could provide children an innovative mindset, discovering themselves and getting into social interactions with peers through the joy of making [8] thanks to creation of new, responsive, smart and creative artefacts and a deeper understanding of what an object means to them.

References

[1] Van Gennep, A. The Rites of Passage. The University of Chicago Press, USA, 1960.

[2] Turner, V. Betwixt and Between: The Liminal Period in Rites de Passages. In The Forest of Symbols: Aspects of Ndembu Ritual. Cornell University Press, Ithaca, NY, 1967.

[3] Bronfenbrenner, U. The ecology of human development. Harvard University Press, Cambridge, MA, 1979.

[4] Dell'Orto, S. W.D. Winnicott and the transitional object in infancy. Pediatric Medicine Chirurgic 25(2), 106-112, 2003.

[5] Spadolini, B. I processi storico sociali in occidente, educazione e società. Armando, Roma, 2004.

[6] Lave, J. and Etienne Wenger. Situated Learning. Legitimate peripheral participation, University of Cambridge Press, 1991.

[7] Brofenbrenner, U. Ecological models of human development. In International Encyclopaedia of Education, 3-2, Oxford, Elsevier, 1994.

[8] Gauntlett, D. Making is connecting. Polity Press, 2011.