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# Toying for Joyful Learning

## Exploring Systemic Process

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### Abstract

The best thing a child can do with a toy is to break it, the next best thing is to make it; even better is to create it. Since 2011, the author has been conducting workshops on toys and games as a resource for joyful learning, for students, teachers, teacher-trainee, psychologists, educators, child development specialists. The medium of toy and game design facilitates the ability to create and express. The idea is to introduce learning from toys and games and hence to explore design process. This has been leading to developing a systemic approach. The power of making and playing is immense. Participants become makers and players. The maker-player combination helps them have an understanding and coherence of part to whole. The paper explores two aspects 1) Toys and Tales development and 2) Systemic Process in learning from the approach of toy design.

**Key words:** *Design and Research, Play Heritage, Toy & Game, Systemic Design, Systemic Process, String Pulled Puppet, Joyful Learning*

### Introduction

Dynamic indigenous toys and games are mystifying and have potential for playful learning. “The best thing a child can do with a toy is to break it, the next best thing is to make it; even better is to create it.” (Khanna, 2018). India has had a tradition of folk toys, where many dynamic toys present a potential for new ideas. The same toy would be made by crafts persons all over India and yet have a local flavour, according to the region (Khanna, 1983). Since 2011, I have been conducting workshops using indigenous toys and games to explore new ideas with participants. While conducting workshops, I was curious to know why participants found the activity of creating ideas and making toys enriching. Two things were observed – one was the idea of connecting toys and tales together and the other that there seemed to be a design process. An indigenous dynamic toy is demonstrated and explained to participants.

This paper explores how does making a toy and creating a tale with it also helps one experience design process. Toys and tales have a cooperative relationship. A Toy enhances the skills of making and a Tale enhances the skills of communication; together they form a fusion of creativity and a design process. This is explained further through an example of “String-Pulled Puppet”, in this paper.

## Methodology

The methodology was followed for understanding the value of learning and design in dynamic indigenous toys and games. This was done through conducting various workshops on invitation. Participant groups consisted of school children, teachers & teacher-trainees and design students. This was based on random sampling. The participants were associated with various schools, universities and organisations, both government and non-government. Documentation of the process and the outcome was done. The following table shows workshops conducted for various groups of participants.

No.	Group	Number of workshops	Average number of participants	Total participants	Countries
1.	Children	22	32	713	India, Colombia
2.	Teachers, Teacher-trainees	33	54	881	India, Colombia, Denmark
3.	Design students	6	26	153	India, Denmark, Thailand
	Total	61	29	1747	India, Colombia, Denmark, Thailand

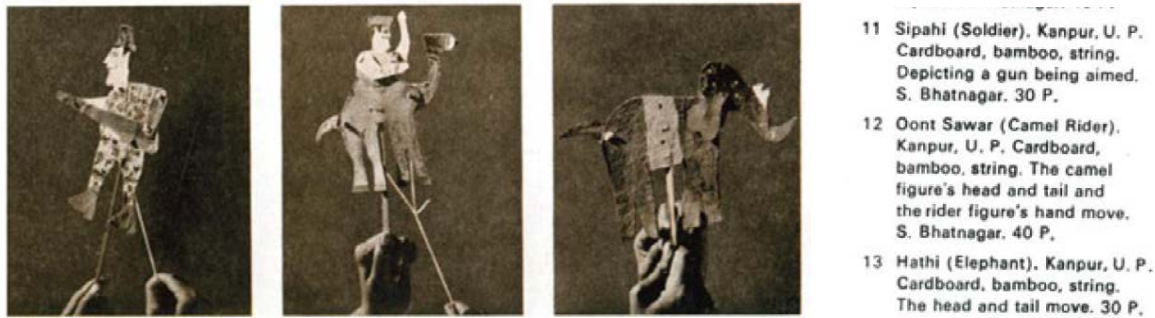
**Table 1. Workshop groups and number of participants from 2011 to 2018**

### ***Toys and Tales development: String Pulled Puppet***

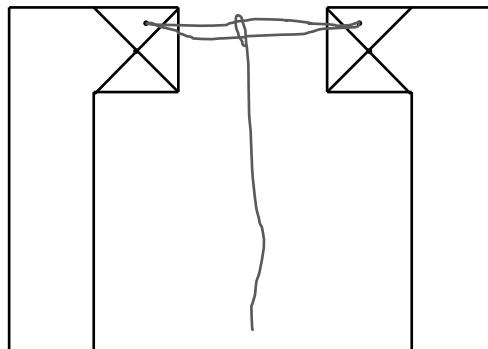
In this paper, the dynamic folk toy String Pulled Puppet (Figure 1.) in the category of string manipulated toys, from the book *Dynamic Folk Toys* is explored. This folk toy traditionally used to be made by crafts persons in various parts of India. A variety of themes and stories used to exist in different regions of the country. These were based on popular characters from media, mythological characters, animal forms. The material used was thick card paper for the form, string for pulling, nails for binding and pivot movement, bamboo stick for holding the toy. The action of playing is linear, which is done by pulling the string downwards and then releasing it. The String-Pulled Puppet was explored in many workshops due to the following reasons: a) the movement of playing with the toy, though linear and unidirectional, created curiosity, b) one toy could have the possibility of creating many ideas, c) can be made with simple and available material, d) puppets are popular among all age groups and is familiar as most people have seen a puppet in some form.

I conducted workshops with three different groups of participants – children of various ages (school students), teachers (schools) & teacher-trainees (universities, schools, organisations) and design students (design, architecture), who developed various design ideas, starting from one idea i.e String pulled puppet. A basic structure was taught. This involved the use of simple geometric shapes. Pivot points were located. Crafts persons (artisans) used to make and develop various forms in toys, by practice and eventually instinct. But in a workshop, where participants were making the given toy for the first time, it was important to start with a simplified structure (Figure 2). The material used in the workshops were easily available material – card paper/ thick paper, string, needle, scissors, ice-cream

stick, color markers, glue. The participants needed to have simple skills of paper cutting, using needle-thread and basic drawing. It was important to come with interest and curiosity.



**Figure 1. Various explorations of String Pulled Puppet, made by crafts persons, documented in the book Dynamic Folk Toys (1983)**



**Figure 2. Construction of string pulled puppet simplified into geometrical shapes and pivot points, developed at Surabhi Khanna design studio, 2014**

Making a toy with available material has the possibility of dismantling it and putting it back together; this provides a relevant learning from these valued short-lived toys (Khanna, Ravishankar, Wolf, Sundram, 2018). To understand holistically about how each group developed the structure of the String Pulled Puppet, the process and outcome of three different groups of participants (children, teachers & teacher-trainees and design/ architecture students) is explained in this section.

### ***Students developing String Pulled Puppet***

Students of class 6<sup>th</sup> and 7<sup>th</sup> from Sardar Patel Vidyalaya were shown an example of the String Pulled Puppet. They then studied the sample of the simplified structure. Each student first made this simplified

structure. The brief was that the student could either add on the structure or subtract from the structure, based on their idea. It was observed that most students made:

- Popular comic characters
- Animal forms
- Fictional characters based on their imagination

Most students showed the developed toy and tale to their classmates, but played on their own. There was a sense that they owned the toy they made and preferred individual play. But some students, specially the ones who had created popular comic characters, tried to form another story between the characters, thereby indulging in group play. One toy and tale example are two students who played “My Superman will fight with your Iron-man” (Figure 3).



**Figure 3. String Pulled Puppet explorations created by Students of Class 6<sup>th</sup> and 7<sup>th</sup> in 2014 at workshop conducted at the school Sardar Patel Vidyalaya, New Delhi.**

Most students used a combination of bright color to create their puppets. Some even drew on them, to make a prominent impression of what the puppet was. Students hence could guess what character or form the other person had made. This clear communication was interesting, as they got interested in each other's puppet, how the other made it. Students also saw how the other had constructed the puppet, in terms of knotting, use of material, dimensions.

### ***Teachers & teacher-trainees developing String Pulled Puppet***

Workshop sessions were conducted for teachers of JB School, Faizabad, India and teacher-trainees of MA Education (Early Childhood Care and Education) program, School of Education Studies, Ambedkar University, New Delhi, India. The teachers were excited to learn the structure and to create new toy design ideas for children in their classes. They made puppets individually. Some sketched ideas on papers. Some searched on internet, forms or shapes or characters they wanted to create. Teachers



created popular stories, with popular characters or animal forms, stories with morals etc. Some examples are: girl moving her plaits, butterfly flapping wings. But while explaining the toy-idea, most teachers played in pairs or small groups. This created an atmosphere of storytelling and making various stories with one or more toy ideas.



**Figure 3. String Pulled Puppet explorations created by Teachers of JB School, Faizabad in 2015.**

### ***Design students developing String Pulled Puppet***

The elective session with student group of architecture on 'Developing Installations inspired by Ingenious Toy Ideas' was conducted in 2014 at School of Planning and Architecture (SPA), New Delhi. This was around 28 hours over 12 weeks. One student group took String Pulled Puppet as a starting point, to explore ideas. They also brought a wooden string pulled puppet, currently sold in specific toy shops. The brief of the project was to develop an installation in a different scale from the existing puppet. The toy-installation had to be connected with a theme or a tale, relevant to their peer group. The students explored and came up with an installation which they named as "Hulkfie" with theme on taking a Selfie – "Lemme take a Hulkfie". The headless puppet was made in actual human scale. A player would stand from behind, place his/her head in the space. Upon pushing the foot paddle, the arms would move, like in the string pulled puppet toy. The installation was kept in a busy corridor, so that the player could interact to be a puppet and take a selfie. It became popular amongst peers.



Figure 4. String Pulled Puppet exploration – “Lemme take a Hulkfie”



Figure 5. “Hulkfie” in action – Installation inspired from String pulled puppet toy

## Analysis

The numerous possibilities of using everyday material creativity, can be rekindled by making a folk toy, which is also handmade and encourages playing with material (Khanna, Ravishankar, Wolf, Sundram, 2018).

1. Participants become makers and players.
2. The maker-player combination helps them have an understanding and coherence of part to whole.
3. This helps in holistic learning – mind, material and media, with components like concept development, material knowledge, science principles, and communication.
4. The sessions are intense and enriching to both the facilitator and the participants as there is a new and novel outcome in each session. The conceptual clarity of participants unfolds beautifully through the process of systemic design.
5. Values of empathy, patience, sensitivity, attention to details – are unplanned yet additional welcome outcome of the sessions.

### ***Systemic Process in learning from the approach of toy design***

Dynamic folk toys, largely have been traditionally designed, based on basic principles of physics (Khanna, 1983). In the case of String Pulled Puppet, the principle of science and technology is Link Mechanism, which results in linear up and down movement of the toy, when pulled. Each time someone is immersed in play, the six basic elements of play - anticipation, surprise, pleasure, understanding, strength, and poise are present (Eberle, 2014). In the case of String -Pulled Puppet toy, the elements of design like symmetry, movement supported elements of play like anticipation (how the puppet will move if pulled), surprise (movement associated with the story), pleasure (joy of playing with the toy and making it), understanding (how to make, create and play), strength (of the idea and relevance with the movement), poise (balanced act of playing). There seemed to be a process of making connecting design and play.

Name of Toy	Material	Design Element	Principle of Science and technology	Learning Value (of playing with the toy and/or making it in the workshops) in terms of design process
String-pulled Puppet	Paper, needle, thread, ice-cream stick, glue	Symmetry, movement	Link-mechanism	Concept development, understanding structure, story making and telling, creative process

**Table 2. Learning value of a Toy: String Pulled Puppet**



Through the process and outcomes of various groups, starting with the same toy, it was realised that there emerged a design process. This was 3Cs: Creating, Communicating and Co-relating. Creating involved creating toys and tales with various groups. Communicating involved playing and telling stories, after making the toy idea. And Co-relating involved the learning from toys and tales.

While working with students, I realised that they create many popular characters, which they have seen and connect to. Children mostly like to work on individual toys and also tell their stories related to the toy. In some cases, if they think that their characters can have a story together and if they themselves are friends, then they relate to each other's toy and tell one story together with two characters. In one outcome, this was "My superman will fight with your iron-man". In others, it was 'a cow telling a story', 'an angel who makes scientific toys'. The communication was in the form of expressing individually mostly. Co-relating toy and learning happened naturally with children. Most were fascinated with the movement of the toy and want to quickly learn the mechanism. Some needed assistance in tying knots using thread, as they were not used to this skill. They understood the pivot points, made the basic structure and tried to make the parts move, before drawing the story.

In the case of teachers and teacher-trainees, Creating of toys and tales brought out many stories, which provided learning or moral, mostly through various characters. One story is 'How a crow puts pebbles in a pot of water to raise the water level to drink' – this is a classic story where a pot of water has very little water. A thirsty crow sees it. It gets pebbles and puts it in the pot to raise the water level, and finally was able to drink the water. The participant made three pots of varying levels of water. The crow was placed on the moving part and the action show that it went towards the middle pot to put pebbles and then back. This simple drawing and cut-out made impact with the movement. Such a toy idea could also act as a model for children to build variations of the same story. While Communicating, the participants played with the puppets and told the stories they had made with the toy. Teachers preferred to present in groups of three to five, quite often connecting their puppets with a single long story or poem. This gave them a chance to enact and express together as a group. This encouraged Group Play, though the original toy puppet would facilitate only Individual Play. The String-pulled puppets became a good example of One Idea to Many Ideas – possibility of creating many ideas from one idea. Co-relating toys with learning helped the teachers mention that they would use this for developed teaching-learning material for their classes, where various subjects could be taught through this toy and many tales. The teachers discussed and expressed that they were taking different subjects like maths, science, language, social studies, art and it felt like the String-Pulled Puppet could be used in their own way in each of these subjects. This could encourage students to make variety of themes to understand a concept or express their thoughts. In a way, I felt that the teachers could conduct such workshops for their classes and plan it according to their subject. The workshops seemed like a solution to be actively able to use toys as tools for learning. Toy design was observed here as tool for holistic & experiential learning. The mini projects encouraged creating an environment of design, play & creativity. These provided opportunities for skill & creative development. These were useful for understanding the interface of mind, material & media. "Playing and telling tales together and Trying to relate each creation with other", were the key points from sessions with teachers as makers and players.

With design students, I could expand the brief in terms of theme and scale. Creating toys and tales was done through life-size installations. This brought interaction and Communication through playing and narrating experiences as well as capturing it in a Selfie. Through the toy, they learnt about working with various material and scale and making it an active interactive installation. For this group, I had the possibility to introduce the aspect of change in context of the String Pulled Puppet. The focus had been on creating an installation which would be interesting for their peer group. “Hulkfie” became popular in the peer group. The students analyzed that both the theme as well as the movement made the installation engaging.

Experiencing design process				
Name of Toy	Participants	Creating (toys and tales)	Communicating (playing and telling stories)	Co-relating (toy and learning)
String-pulled Puppet	Teachers, teacher-trainees	Stories ending with learning or moral or characters.	Spontaneously presented their stories and sometimes poems together by connecting all their characters to one story.	Could be used as a teaching-learning material. Various themes from the subjects taught, could be made.
	Students (children)	Stories related to popular characters. “My superman will fight with your iron-man”.	The children made a variety of stories. They individually expressed their forms and stories, sometimes connecting with each other.	The movement of the puppet fascinated the students. Understanding the pivot points. Learning the skill of tying knots.
	Design students	“Hulkfie”, as the installation was called since it was inspired by Hulk’s form, became a very popular installation at the student festival.	Designed for a different context. Changed the scale.	Students were thrilled to be able to make a toy into an installation. They learnt about material knowledge, weight and force and how to make an interactive installation.

**Table 3. Exploring systemic process in learning from toys**

The model depicting Maker-Player relationship (Figure 6.) shows the original scenario, present approach by the author and near future approach suggested. Originally, dynamic folk toys were made as well as

sold by artisans to adults who were buyers for children who were the players. In the approach taken by the author, both maker and player are participants (children, adults). In this approach there is currently no platform to sell or buy. This is for creative exploration. The author suggests that for near future, the makers could be both artisans as well as participants, the seller could be a common platform, open to various makers, buyers could be appreciative adults and players could be any age group. This is a more collaborative model, which decreases the gap between makers and players.

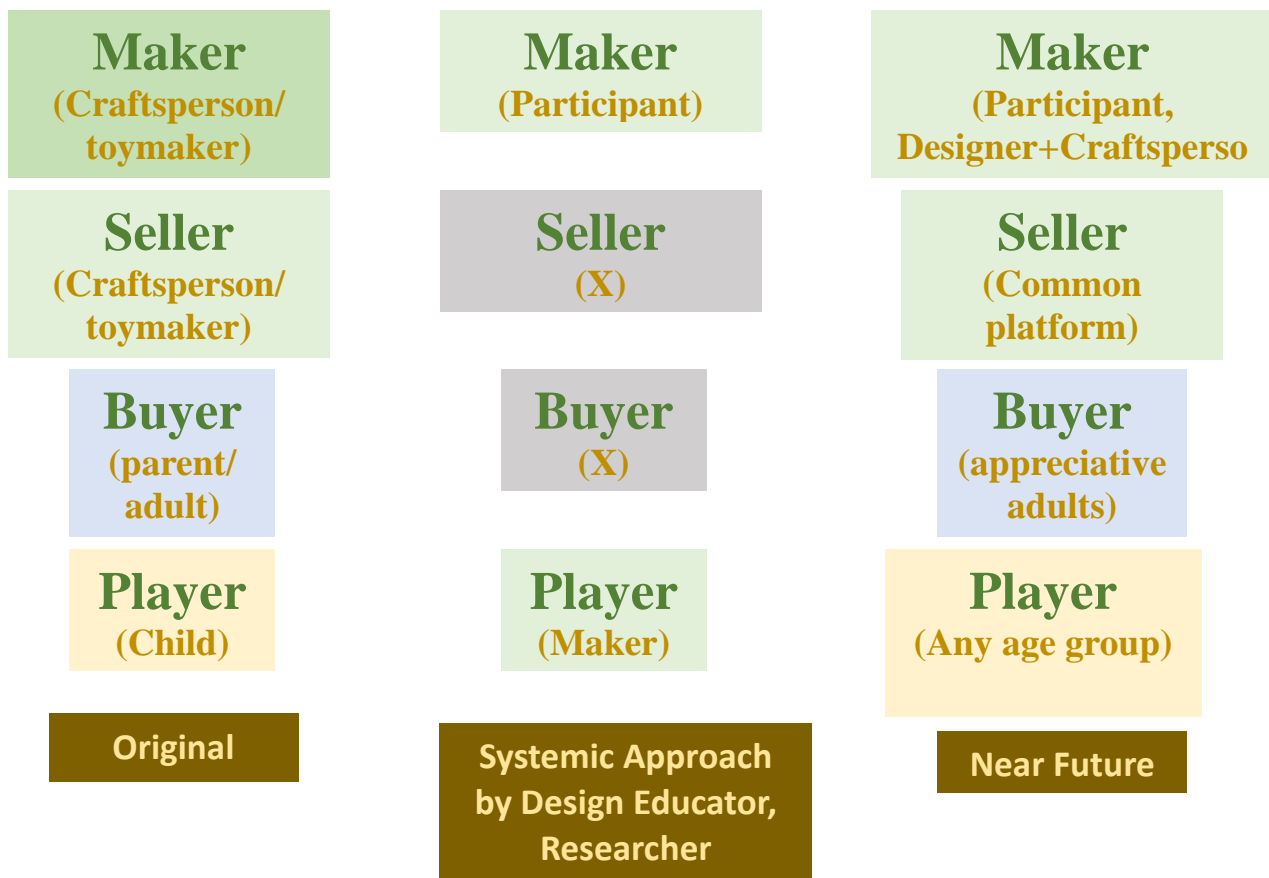


Figure 6. Maker-Player relationship in past, present, future

The original scenario worked well with the need of toys and their availability. These toys were handmade by artisans. But with growing need of toys, a variety of play material, availability of machine made alternatives, the current situation seemed different. The handmade, indigenous folk toys, made and sold by artisans, seemed to lose their market. The play value was also not explained well. Toy designers and researchers in India could document and explain the play and learning value of the folk toys. But to reach to a larger audience, they started making it themselves and teaching it to groups of children as well as teachers, educators. This is the model which the author is continuing. But there is still a need to create a platform so that such valuable toys are available, not only as do-it-yourself approach but also a product to purchase and keep.

## Conclusion and Reflections

Reflections and indications from the workshops have given the following insights:

- The workshops provide a heuristic approach to learning.
- There is potential of play and learning in indigenous toys which is experienced through the workshop sessions.
- The idea of One to Many is effective as there is an opportunity to create many ideas, starting from one idea.
- Interaction between participants prevails.
- Children get deeply involved in the process of creating and playing.
- One of the best ways to document play ideas and make it with today's context through stories and themes. This may be way to revive or innovate heritage.
- The design explorations also are cultural resource for learning.
- Framework using such a systemic approach for designing and developing new ideas. This is aimed to be useful for children and teachers for learning, as well as design community.

The exploration of maker and player relationship has the potential to be developed for a systemic approach. The approach of part (toy) to whole (maker-player relationship model) displays coherence. Though the starting point has been from making a toy for learning joyfully, but the idea has been to explore how one can continue this effective way of learning and sustain it in the overall ecosystem of makers, players, learners as well as people of various ages.

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