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The role of fantasy in contextualising and resourcing design and technological activity

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Abstract
Design and technological activity is premised on a notion of what might be rather than what is, on the capacity of a human being to change, develop or create a new ‘made world’ producer system in response to a desire or purpose that is perceived. This inevitably involves us in exploring in our minds what a product, situation or need might be like - in using our imaginations in a way that frees us from the restrictions of reality. This may result in ideas which are pure fantasy - ‘cloud cuckoo land’ that perhaps can never be realised. Alternatively the results may be fantastic - creative, innovative ideas that can be successfully realised.

This paper explores the ways in which fantasy can be used as a positive support to design and technological activity. It describes examples where fantasy plays a role in such activity with young children and discusses the value of this particularly in the context of ‘designerly’ and ‘imaginative’ play and creativity. The paper then moves on to explore the strengths and weaknesses of the use of fantasy in design and technology activity with older children and the way in which it relates to design and technology activity of adults. Finally it raises questions about the point at which fantasy becomes visionary, and issues about the implications for teaching and learning indicated through examples of both use and abuse of fantasy and the important role it can play in developing design and technology capability.

At this point in time we are at a crossroad for design and technology education in this country. We have many years of developments from the worlds of design education and technology education to build on. We have a prototype National Curriculum subject of Design and Technology which, although it might presently be seen as an infant who is suffering the bewildering pain of cutting teeth, has much to recommend it and great potential for supporting the development of capability in our young people. But we also seem entrenched within a political climate, bred from the Thatcherism of the 80s which demands instant, slick results and, in the world of design and technology, an increasingly vocational or instrumental thrust.

With the introduction of a National Curriculum for 5-16 year olds we saw the opportunity, through the inclusion of children in the early years of schooling, to re-establish a more developmental notion of education for capability in this area - the notion of taking an exclusively instrumental view and gearing the experience of six year olds to skills they would need in their vocational life has an absurd ring to it. Maybe by beginning to look at the way in which design and technology capability can be fostered in the very young, by understanding and promoting the naïve, divergent approach they bring to their activities, we can enrich the understanding we have developed through working with older children. Or maybe not, for some of the current drives and backlash movements appear to negate this approach by presenting a framework for D&T activity where the priority is utility - to take a currently popular example, if a child designs a clowns hat then what is seen by this view to be important is that it works; that is to say it stays on the clown’s head when he turns a somersault. Unfortunately this example assumes some very limited criteria - doesn’t the character the clown is portraying also need to be considered? Isn’t it likely to also ‘work’ if it makes people laugh and might it be that it does this by falling off when the clown turns head over heels? To follow this same utilitarian approach, raises some interesting questions - like how do you know in 1992 if a necktie ‘works’?

A quite justifiable reaction to this limiting view, in defence of the developing child, is to look at some of the crucial dimensions of design and technological activity that are in danger of being excluded from the experiences children are engaged in, because they don’t fit the mould of this utilitarian model being promoted. For this reason, I am focusing on the fundamental role fantasy plays in design and technology activity.
The value of fantasy in design and technology activity

For most young children the world of make-believe or fantasy is a very familiar place. Its a world they enter unbidden to explore through their imagination the realities of the concrete world they live in, and to create perspectives on other possible worlds.

‘The concept of “what might be” - being able to move in perception and thought away from the concrete given, or “what is,” to “what was, what could have been, what one could try for, what might happen” and ultimately, to the purest realms of fantasy - is a touchstone of that miracle of human experience, the imagination.’
Singer and Singer 1990 p.19

To watch a young child playing with a twig that in her mind’s eye has been turned into an aeroplane, is to watch a great skill being displayed - a skill that enables both the freedom for the mind to be as creative, exploratory and preposterous as it suits, but which at the same time keep a firm grip on reality.

‘Kay, do you know what I’ve got in here? ... I’ve got some earth and I’m going to mix in some water and I’m going to make a chocolate cake and I’m going to give it to Rachel to eat ... but she doesn’t have to really.’
Annie B. age 5

This ability to handle both fantasy and reality simultaneously could be argued to be of fundamental importance to the design & technologist - to be able to conceive ideas that push out the boundaries of the possible, while mediating these ideas through a grip on reality. But while the cautious amongst us might assume that there is risk in allowing ‘flights of fancy’ because the flier may lose sight of reality, research would indicate that the ability to handle both is not uncommon and that the more disposed a child is to fantasy, the more likely they are to have a grip on reality. Tucker, (1975) in research looking at the ability of children to recall stories without distortion, found that children with a high ‘fantasy predisposition’ (measured through Rorschach [1942] inkblot test, and Singer [1973] interviews) were less likely to introduce gross distortion into recalled stories than those with a low predisposition. Although not substantiated by a specific study, Jerome and Dorothy Singer [1990] also propose that: ‘the process of engaging in make-believe play might actually help children discriminate between fantasy and reality.’

Looking in on design and technology activities of young children it is easy to see the way in which fantasy operates to support the activity. Relating their designing to the needs of a character in a story is a very effective way of contextualising the designing and gives them a reference point from which to establish criteria.

A group of 5 & 6 year olds involved in the trialing of the KS1 design and technology Standard Assessment Tasks had been studying the story of the Owl and the Pussycat when they decided the two would need a very adaptable hat to wear on their journey for a year and a day. While the context was pure fantasy, it allowed the children to address in some depth the issues they would need to resolve in designing the hat and to establish clear criteria to aspire to in their designing. After charting the variations in weather over just a few weeks in January, they decided that the hat had to keep out the rain and wind, keep the sun out of the eyes and off the back of the neck and keep the Owl and the Pussycat warm.

Using fantasy as a starting point for design and technology activity provides a reference point for establishing criteria, but it can also be used when making decisions and evaluating the success of a project. In another school a six year old was designing a car for a toy hedgehog. When evaluating the success of the car, the child entered back into the fantasy world as he explained to his classmates that Harry (the hedgehog) liked the car very much because he could see out ‘all the way round’ (a plastic supermarket pasta tray had been used for the upper body) but that Harry didn’t like the door because he found it difficult to get in and out. Elsewhere, a group of children were designing furniture for Winnie the Pooh. When asked by the teacher which material they would use for a chair seat, they said they would have to ask Pooh, who duly decided on a particular fabric.

An interesting example of a young child holding both fantasy and reality in his head in a way that opens up the possibilities of design and technology is given in “The Big Paper” [1991]. The class are designing litter collectors for an adventure park and the child in question had designed and modelled a litter collector that includes facilities for collecting and cleaning cans, collecting, crushing and cleaning bottles and that also ‘washes gardens, waters flowers and washes away insects that eat the flowers’. Within the concept of this multifaceted machine are numerous comments on the child’s view of the reality of using the machine - ‘the glass is crushed inside that door so it can’t cut you’, the cans are cleaned so that they can be re-used. The child has used fantasy to push out the realms of the possible and produced a highly imaginative and potentially
exciting design. And at the end of the day, while having thought long and hard to develop the ideas as effectively as possible, he recognises that in reality, 'it's only boxes'. This child is handling concepts in his designing in what, in the APU design and technology survey we termed 'black box' and 'street level' [Kimbell et al 1991] - he knows it is possible to clean cans and crushes bottles, he probably even has some glimmer of understanding about how this might be done, but he doesn't yet have the understanding to make it happen for himself. As a child at the beginning of his school career, this seems perfectly appropriate and with the level of inquisitiveness and creativity he is showing one can imagine it is only a question of time before the understanding has been developed.

The danger of being out of touch with reality

While in the above examples it is possible to see the strengths the use of fantasy can bring to a project, it can equally become a weakness if fantasy is used not to provide a reference for reality but an escape route from it. The examples in figure 1, taken from the APU design and technology survey (ibid) which targeted pupils nearing the end of their school careers, show pupils' designs for a 'moving face toy' for a baby. Figures 1a and 1b show design ideas where wild claims are made for how the toy will work - 'When you press the nose he laughs and his eyes move like a human' ... as if by magic. In figure 1c there is an attempt to explain that the change in the face will be powered by a battery, but any real attempt at working out how the toy will function is avoided. In all three examples decisions are made superficially on designs that are effectively in 'cloud cuckoo land'.

A further aspect of concern is where reality is handled in so superficial a way that it might as well be fantasy, and where again the end result is that the real issues have been left unattended. Work of this nature is often engaged in for good reasons - take for example a fairly common example of children designing for people living in a totally different cultural and geographical region such as a rain forest. Activities of this type are usually instigated by genuinely philanthropic motives, but unless the children are resourced to effectively develop a good understanding of the nature and concerns of the lives of their 'clients', they are left to imagine what they might be, and develop criteria for their
designing which are based on supposition and stereotypes, leading to designing which, at best, handles a very narrow set of issues and at worst patronises rather than understands the client.

One such project was being undertaken by a group of ten year olds who were designing houses for people in rain forests. In many ways the work was impressive - criteria were established, detailed plans showing both measurements and construction methods were drawn up and small scale models showing a high level of quality of finish were made. But the only issues that were attended to were those that were purely technical - stilts were used to keep the houses out the water, sloping roofs so that the rain would run off. Nowhere in the work was there any indication that real people with real concerns and their own very rich traditions and culture were going to dwell in the houses. Unless the children could begin to get inside an understanding of the lives of their clients, how could they ever be expected to bring creativity and imagination to bear on meeting the clients' needs through design and technology?

Of equal concern are situations where focusing on reality has provided very genuine criteria for a design and technology project but where the child has no creative or imaginative repertoire to draw on in developing design ideas to match the criteria. A 10 year old girl was designing a ‘plant starter’ to “help plants start growing the minute they are planted”. She wanted it to have a liftable lid, sloping roof and separate sections to keep seeds, plant food and the watering can. Her design to achieve these aims demonstrates a very mundane approach. Is the representation she put on paper what she saw in her mind’s eye? If it is, should we not be sad that her expectations of the possible should be so limited? If one were take a parallel example and think of the design for the plant starter in terms of poetry it would be seen as totally lacking in clarity of meaning, impact and imagery. Do we want to promote generations of young designers who appear to have dimensions of capability so stunted?

It could (and no doubt will) be argued that not all of us are creative and therefore the above example is just a fact of life, but once again research in the area of imaginative play [Freyburg 1973, Saltz & Brodie 1982, Smilansky 1962] indicates that not only can children be ‘trained’ to be more creative by engaging them in structured make-believe, fantasy play, but that the spin-offs enhance various aspects of skill that are important in the development of design and technology capability such as group problem solving, originality and perspective-taking.

The strength of using fantasy with older pupils

If the ability to engage in fantasy is important in the process of generating and developing design and technology ideas, then it follows that it needs to be seen as appropriate behaviour for all children not just the very young or ‘childish’. Much research has focused on the stages of a child’s development and the way in which their engagement with fantasy is manifested. A Piagetian view may propose that imaginative play diminishes in young children as operational thought comes to the fore, but this view is denied by the personal experience of many who have written in this area [Singer 1973, Baynes 1986]. Dorothy and Jerome Singer explain the ‘going underground’ of engagement with fantasy as having a different cause.

‘While Piaget seemed to suggest that imaginative
play fades by the early school years as “operational” thought takes over, we shall suggest that it is merely submerged in the interest of the changing demands of the school decorum and other social pressures.’ Singer & Singer 1991

Ken Baynes (1986) uses his own experiences as a young adolescent to explore the way in which he engaged in fantasy worlds he and his friends engaged in which involved them planning, designing and making complete environments and systems, for example a woodland bus service, and to support their play a whole host of props or artefacts such as bus maps, advertisements and timetables. The constituent parts of their activity resembled all the detail and complexity of design and technology activity, but all was set in a fantasy land. This type of activity he terms ‘designerly play’.

Often however, as Singer and Singer suggest, older children will feel that outwardly such activity is viewed as ‘childish’. Providing young people with messages, whether overt or covert, that denies the appropriateness of activities like fantasising is very easy to do. Take, for example, the case of a professional artist reflecting on taking art O Level.

“We had to draw this carrot as a test of drawing for what was then the GCE examination. I cut mine in half and drew dozens of little people coming out of it. I failed the exam. The following year I chose the carrot idea again amongst others, but this time I took a much more traditional approach and I drew it without the crowd. I got a grade A.” Barnes 1989 page 20

For older pupils fantasy or make-believe can be used as an effective contextualising strategy and was one that was used in both the ‘paper and pencil’ and ‘modelling’ tests that formed part of the APU design and technology survey in 1988 [Kimbell et al 1991]. In these test activities we asked the pupils to take on the role of ‘designer’ as a member of a large design team, each part of which had different responsibilities. The pupils found this an acceptable situation and the vast majority became happy to undertake the task ‘in role’ in a way that freed them from concerns they might otherwise have had. For example, if they were part of the team that was exploring the needs of the client and early design ideas, they were liberated from the panic of taking a design from conception to completion in an unreasonable amount of time. Equally, other pupils were happy to take forward a ‘half baked’ idea someone else had come up with, because it was there job to see how the idea might really be made to work. In developing the ‘half baked’ ideas to present to the pupils we were concerned with a further aspect of creativity - of facilitating the pupils in a way that enabled them to image and model ideas in the ‘mind’s eye’. Our early trialing indicated very sharply the importance of presenting at starting points, neutral images or concepts rather than strong pictorial images if we wanted the pupils to go beyond the superficial and let their minds explore and expand a diverse range of possibilities.

The place of fantasy in industry
It is one thing to consider the exploitation of fantasy in projects with school children which one would assume fundamentally to have an educational rather than instrumental aim, but how does fantasy fit into the world of design and technology that adults engage in, whether through their professional or personal lives?

Once again research in the area of play sheds some interesting light. A study concerned to assess ‘everyday creativity’ [Richards et al 1988] sought to measure creativity on a classification scale from ‘not significant’ to ‘exceptional’ by looking at activity such as designing a house, launching an advertising campaign or cooking an imaginative meal, found a strong correlation between creativity in adults and the ‘fantasy dispositions’ of those adults as children. Once more the importance of developing the ability of children to engage in fantasy is pointed to.

It is also worth considering some strategies professional designers use in conceptualising and developing design and technology ideas.

A group of 3rd and 4th year product design degree students from the NHIBS in Antwerp were designing a prototype ‘bus shelter’ for Venice. Their starting point was to “day dream” the imagery they wanted to express through the design. The imagery was expressed in words and phrases such as ‘smooth traffic in the silent water streets’, ‘sweet link between water and land’, ‘city with an ancient heart’, ‘lovely details enlighten your heart’. This imagery was then used as a reference point in their designing.

The Japanese car company Honda have developed an approach to giving a unitary concept to every department working on the different aspects of the development of a car in order that the overall ‘feel’ or ‘image’ of the car develops in a harmonious way. The teams developing a new model in the Civic range all held a common concept of a car that was ‘like a rugby player in a dinner suit’.

Christopher Jones [1970] draws our attention to a group who had the problem of devising a ‘vapour-proof closure for space suits’. The starting point was to ask themselves ‘How do we in our wildest fantasies desire the closure to operate?’ The team...
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go through a series of suggestions from ‘wishing’ to a ‘mechanical bug’ and ‘trained insects’. In fantasising how the insect might work, the insect becomes a ‘skinny demon’ and they hit on a real potential solution.

‘Listen ... I have a picture of another type of stitching ... That spring of yours ... take two of them ... let’s say you had a long demon that forced its way up ... like this ...If that same skinny demon were a wire, I could poke it up to where, if it got a start, it could pull the whole thing together ... the springs would be pulled together closing the mouth ... Just push it up ... push - and it will pull the rubber lips together ... Imbed the springs in rubber ... and then you’ve got it stitched with steel!’

[ibid]

Interestingly one of the team had tried to call a halt to this whole process to take what might be seen as a more rational route.

‘There are two days left to produce a working model - and you guys are talking about childhood dreams! Let’s make a list of all the ways there are of closing things.’

[ibid]

So, from the above examples it would appear that fantasy is just as effective a resource for the professional designer as it is for the young child and that rather than imaginative play fading out as operational thought take over, that the two can operate alongside each other in an invaluable, complementary way.

If this is the case, then we would be foolish not to take account of this potential in designing teaching and learning programmes for young design and technologists. Of prime importance within this would be attributing a certain status to fantasy and imagination and promoting an environment which fosters the appropriate use of fantasy in designing for all, not just the very young. It is also likely that teachers would need to adopt positive strategies to help children develop (or re-develop) their facility for fantasy, imagination and dreaming, as is suggested in such approaches as the training in imaginative play [see earlier, Freyburg 1973, Saltz & Brodie 1982, Smilansky 1968] and in the use of neutral concept models to enable imaging and modelling that we used in the APU design and technology survey.

However, this whole case for the importance of fantasy has been made by drawing on isolated examples and tangential research, so a further implication points to the need for more work in this area looking directly at the link between fantasy and reality and their roles in design and technology, both in terms of the development of classroom strategies that will assist us in helping children realise their full potential in this area and in conducting further research that will give us a deeper insight into this area. In raising this issue I find myself supporting an earlier plea:

‘What I do want to do is to suggest that ‘designerly play’ is worth further investigation. Observing children playing and understanding better the mental processes they employ, would, I believe, be an important contribution to understanding the direction taken by design ability in the larger pattern of human intelligence.’

[Ken Baynes 1986]

References


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