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# Rich Pictures: A valuable means to explore complex IS issues

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# Rich Pictures: A valuable means to explore complex IS issues

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## Abstract

*This paper discusses the value and interpretive risks when using iconography for system understanding using the rich picture tool. It is suggested that a visual language of pictures offers a way of global communication that far exceeds the limitations of text and speech. We argue that a simple graphic can be rapidly communicated, processed and transmitted within a large and culturally diverse audience in a way that is unique to graphic images. We suggest a natural intrinsic grammar belongs to the rich picture in terms of relationships, shape, connectors, context and sub-boundaries.*

*Keywords: Rich picture, Communication,*

## 1. Introduction

The rich picture (RP) is a graphical tool that produces cartoon like representations of problem situations within organizations. Knowledge is gained from multiple stakeholders and differing viewpoints usually within a workshop context. Checkland uses the RP as one of the 3 primary tools in his soft system method maintaining that it must not be structured. The RP tool is popular amongst many analysts but has been increasingly criticized over the years for its lack of syntax, structure and rules (Bronte-Stewart, 1999). We suggest that many users destroy the rich pictures they have drawn. There are however, a few practitioners, who retain the RP's from workshops they have been involved in. When asked why they retained these RP's the following replies were received;

- “useful to remind and reflect upon a project”
- “I keep the good ones to show others what is expected in a picture”
- “I keep all documentation cause at some point it could become useful”

- “we spent so much time and effort, laughter and arguments on this picture....I just couldn’t bring myself to throw it away”

We claim the RP is an emotional, time-consuming, valuable organizational artwork and not a by-product of a previous soft system phase. Accepting that not all RP’s will be artistic or attractive they do however perhaps deserve further exploration rather than being archived.

## **2. Brief history of manmade icons**

Images have been used for communication throughout history. The earliest evidence of graphics dates around 38,000 BCE (Horn, 1998). Eighteen thousand years later we can date early cave paintings of men, animals and simple hunting tools whilst ten thousand years further on we start to see the development of the written language. Around 3,200 BCE Sumerians had some 2,000 separate signs used as early graphic writing techniques and the Egyptian hieroglyphics, arguably, are also dated from around this period. The North Semitic Syrian alphabet, containing 22 letters, has been named as the first phonetic alphabet thus becoming the basis for Greek and subsequently all Western phonic written languages. There have been numerous proposals for using pictorial representations for international communication. Examples range from Bliss’s Semantography, Alexander’s Pattern Language, Neurath’s ISOTYPE and PICTO by Jansen (Horton, 1991, p. 28). Success of such communication can be seen in areas such as music, mathematics, and certain branches of science.

Using art as a form of providing metaphor or showing organizational activity is not a new concept. In 1938 Barnard, renowned for his work on organizational theory states, “management is a form of art rather than science” (Barnard, 1938, p.325). Some regard this form of art to be performance (organizational) art (Goffman, 1959), (Mangham & Overington, 1987), (Vail, 1989) or more currently organizational story telling (Boje, 1991);(Forster, et al., 1999);(Denning, 2011). Dreyfuss produced a sourcebook wherein he proposes over 20,000 symbols that “should be in the world of standardized, universally understandable graphic symbols” (Dreyfuss, 1972).

### 3. The Rich Picture

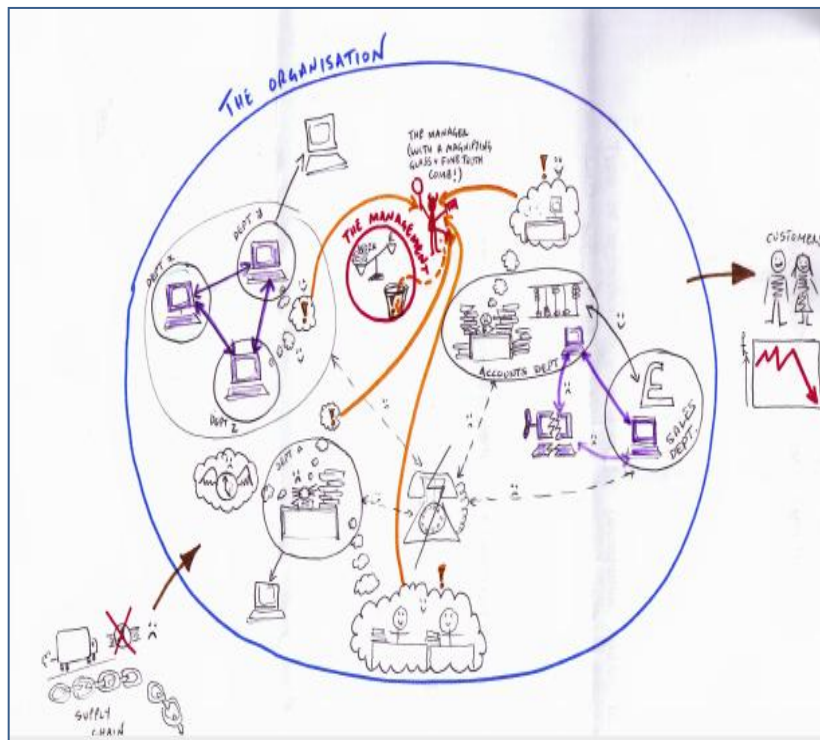


Figure 1 RP from author's portfolio

The RP is an unstructured way of capturing information flows, communication and, in essence, human activity. The RP identifies 'issues' (Checkland & Scholes, 1991) 'concerns' (Monk & Howard, 1998) or 'wicked' problems' (Rittel & Webber, 1984). Words can be too powerful and open to abuse whereas a picture can encapsulate meanings, associations and non-verbal communication such as emotions and feelings. The RP technique gives the 'lowliest' an equal voice allowing for previously invisible system workers to be heard and allowed to be noticed.

RPs are usually hand drawn and do not require artistic talent (Figure 1). Lewis warns of the dangers of misinterpretation without a source key, “this has certain dangers, for the use of symbolism and pictorial metaphor may lead to ambiguity, particularly if no key is provided for the diagram” (Lewis, 1992). Others in the late 90’s discuss the lack of Universal Standards (Coyle & Alexander, 1997), (Monk & Howard, 1998). Bronte-Stewart concludes that, “there does seem to be a need for techniques that assist the analyst during the early stages of an investigation to make sense of the problem situation” (Bronte-Stewart, 1999).

Based on an in-depth literature review and personal communication with those who participate in RP workshops, the main problem areas with the RP tool are:

- Reluctance to participate
- Reluctance / uncertainty at the start
- Dominant individuals
- True participation
- Equal voice
- Unwillingness / inability to draw
- Stakeholders defending status quo
- Need for autonomy
- Interpretation
- Takes too much time

It is worth noting that the RP can, and often is, created by a single person. RP’s drawn by individuals representing the same problem can be successfully merged but this negates collaborative appreciation which, for some, is the purpose of creating the RP. The RP is a representational and creative tool used to see the big picture by zooming away from the immediate problem situation. Looking outwardly at a problem or adopting ‘synthesis’ (Dewey, 1910) allows for more creative human activity problem solving. The RP tool is primarily used to gain interpretation from multiple perspectives revealing different perceptions of a problem situation.

To clarify our position, this paper will call all graphical images of the RP either icon or iconography. In semiotic terms this would not be entirely correct but identifying each image as icon, index or sign would perhaps cause confusion. To this end the terminology used here will be discussing the RP as one whole picture (figure 1) that contains individual pictorial elements that will be called an icon or iconography.

#### **4. Size and Pictorial Depth Perception**

We suggest the size of an RP icon determines its significance and power within the whole picture. From previous research it is shown that the larger the individual iconography then more this indicates the key issues of concern (Berg & Pooley, 2012). Problems of differing perspective can be seen when size indicates distance. An example is taken from Hudson in 1960 whose picture is of a man attacking an animal with a spear (figure 3).

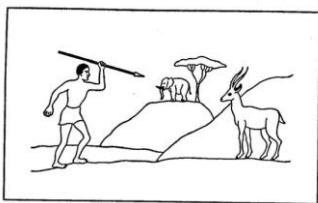


Figure 3 (Kennedy, 1974, p. 72)

Western ideas of perspective suggest man is aiming at an antelope in the foreground but others believed that he is aiming at the elephant with the tip of his spear. Hudson, enquiring from South African children, found that few had problems identifying the animals and the human but there were definite distinctions on what was being attacked (Hudson, 1960). Some applied logic to the picture saying that man would never kill an elephant whilst others stated the picture was too ambiguous.

Both Hudson (1960) and Goldsmith (1984) on the subject of visual literacy suggest that humans need to learn to read pictures and issues of context, experience, depth and interpretation can be enhanced with exposure and training.

## 5. Communication

To read and interpret a RP in one way could actually suggest the opposite of the true intended meaning or at very least take away from the key elements. Individual *weltanschauung* and ontological beliefs will affect interpretation. Reading direction is culturally defined; Europeans read from left to right, Arabian from right to left and Chinese from top to bottom. Figure 4, shows a picture used to give instructions to illiterate miners in the South African Chamber of Mines. The instruction was a complete failure because miners read from right to left and far from picking up the boulders they blocked the tracks with the rocks.



Figure 4 (Horton, 1993)

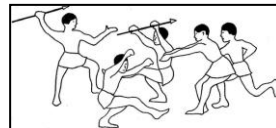


Figure 5 (Kennedy, 1974)

The RP's that are considered, in our opinion, to be of excellent quality both in richness of icons and simple interpretation have overcome directional problems of interpretation by inserting arrows or a numbering system. Using arrows or a numbering system to guide the reader in a certain way ensures no contradiction of the intended meaning.

In the crowd scene in figure 5 we ask; are the people fighting or dancing? Different cultures have rules that forbid men to dance with men. Other cultures do not, and these cultural distinctions change interpretations of the image. Misinterpretation and misrepresentation can occur through cultural differences. As Horton (1991) states, "every culture has artistic traditions and expectations that embody the basic values of the culture at large". Cultural differences within symbol user perception was addressed by Lin in an international study of telecommunication symbols which used a system of rating's to identify symbol preference (Lin, 1999).

## **6. Complexity represented by Simplicity**

Goldsmith states, “simplicity in illustration is difficult to define: if simplicity means lacking of information a picture could be far from simple to understand” (Goldsmith, 1984, p. 2). Vitz (1966) suggests that humans prefer complexity in visuals. What constitutes complexity whilst embracing simplicity in visual illustrations? Goldsmith (1984, p. 270) suggests there are eight factors that attract or direct attention; colour, position, size, isolation, complexity, tone, directionality and implied motion. The human capacity for processing information is actually quite limited. Millers Law (1956) of seven (plus or minus two) has been long accepted as a common guideline for the number of objects we can hold in our working memory. More recent studies have shown the correct number is probably around 3 or 4 (Farrington, 2011). The Law of Closure is a gestaltian belief suggesting that objects that are grouped together are seen as a whole. Often known as the law of simplicity, this theory suggests that our minds self-organize information in a standard way that is arranged, symmetric, and simple to interpret. We organize shapes or lines in our mind to a single form that is more than the sum of its parts.

The background or blank space in a RP is not a by-product of the graphical object as it has many communicative qualities. The backdrop sets the scope of the picture and provides a frame of reference that can be used to compare clusters of objects, emergent patterns, isolate key elements and guide the reader’s eye in a certain direction around the page. Spatial grouping in the RP can be analyzed to interpret interrelationships. The proximity of objects shows their relatedness which can be further enhanced by lines and arrows. Such connectors offer the reader a holistic understanding of several interconnected objects. Symmetry and alignment of RP icons show pattern relations with boundary enclosures signifying similarity within the domain or sub-domain.

## **7. The Interpretive Value of Colour**

The question of whether to add colour is individual and one which cannot be answered with any degree of certainty. Goldsmith (1984, p. 263) notes, “it appears from literature that it is not colour in itself which is important; it is the contrast which





it provides with surrounding areas". Colour can aid learning by enhancing recall, focus attention on key elements and add visual dimensions that exceed a black and white drawing. There are numerous positive and negative associations of colour that have strong connotations with various different cultures, regions, economies and political persuasions.

## 8. Symbols, Signs and Icons

Within semiotics there seems to be many linguistic, lexicographer and semiotician constructions on the actual meaning of symbols and icons. In full acceptance of this dichotomy we take the viewpoint that a symbol is something that represents or symbolizes something else. A sign indicates that there is something present in the environment whereas a symbol allows us to conceive an object even if it does not actually exist. Symbols are more than metaphors because they actually represent something rather than simply joining together unlinked things to represent conceptual meaning. Semiotics considers the world to be a system of signs wherein a sign is understood to be the relationship between a symbol and the meaning conveyed by the symbol. Within Semiotics there are three kinds of signs; icons, indexes and symbols. There is much confusion and conflict amongst linguists and semiotician's on absolute definitions, pictures, are generally separated into two categories: Pictographs and Ideograms.

**Pictographs:** These are pictures which resemble what they signify. They are used for instructions; airport signs, public toilets, road signs, laundry symbols, hazard signs. The International Standards Organisation in 2007 set up a databank of international public information symbols; ISO7001.

**Ideograms:** These are usually symbols that represent ideas or concepts. For example, the hieroglyphic house symbol  was derived from a floor plan and the Chinese river symbol  was representative of a stream.

## 9. Icon Scripting

This research takes the viewpoint that the RP icons are graphics that represent an entity, object, process, or concept. Such iconography is considered useful if it offers transparent meaning and valuable content to the whole RP. We are in agreement with Berniker, that the “iconic script is a system of writing constituted by iconic symbols” (Berniker, 2003). Figure 6 is a RP icon script where several icons are used to convey a variety of problem situations. The iconic script tells a simple story with the use of icons with a clear start and finishing point.



**Figure 6** example from authors own RP portfolio

If the RP is to be read as a story of scripts then obvious problems occur with where to start the reading ; linear, right to left, left to right, columns, single pictographs, stacked, circular

## 10. The Grammar of the Rich Picture

This research suggests that there are various outlines, orientations and natural relationships to RP iconography that offer intuitive interpretation without the need for expert analysis skills. Objects such as buildings, servers, tables, filing cabinets, computers, transport, CCTV cameras and graphs are mainly drawn with hard straight edges suggesting a mechanistic manmade structure of an object which is fixed and rigid in structure. Hard lined rectangular speech bubbles deliver hard comment, exactness or technical process instruction whereas the softer the shape of the speech bubble the more the message becomes opinion or conceptual in thought. Other rounder shaped icons, such as faces, time, handshakes, clouds, thought bubbles and hand drawn question and exclamation marks are seen to represent abstract concepts such as time, happiness, unhappiness, agreement, concern, anger and query. They are perhaps not as rigid as the hard line drawings but offer understanding on more tacit

emotional features of the problem situation. Sharp and jagged shapes are powerful icons in the RP that radiate noise waves or broadcast raw feeling and reaction.

We suggest such RP icons such as fire, jagged speech bubbles, crossed swords and thunder all signify sharp shapes. They denote strong emotions or genuine beliefs such as conflict, anger, broken technology, disagreement, tension, and dispute. Orientation or angling an icon in the RP offers even more insight towards interpretation. The angled CCTV camera or watching eye icons are common features within the RP (Berg & Pooley, 2012).

Grammar provides the rules and syntax and order that govern a language. We suggest that the rich picture can provide enough context of domain and boundary to allow certain iconography to be understood with universal acceptance. Context will come from the adjacent icons, boundary and sub-boundaries and other supplementary stimuli such as colour, size, text and facial expression. RP interpretation enablers can also be background space, lines and arrows demarcating direction, consistent style and size of neighbouring icons. Both facts and emotions and complexity can be portrayed in simple drawings in a RP (figure6). Synecdoche is frequently seen within the RP. The Synecdoche is a familiar sign to represent a whole object or a concept, for example knife and fork pictures for the food court or a musical note to represent sound. From analysis of 298 RPs there are many examples of synecdoche. Such as; Ties to represent management, Flags for countries, Beds for accommodation, the shopping basket for retail outlets and mortar boards for academia. There are certain icons that repeat time and time again within the RP and we have identified a fraction of these as non-domain specific icons in previous research (Berg & Pooley, 2012).

One of the major criticisms of the rich picture is the problem of interpretation. This research suggests that human icon interpretation is considerably better than it was 30 years ago due to exposure of symbols. Humans constantly get bombarded with graphical symbols such as signs in airports and on roads, buttons on kitchen appliances, icons on computer screens and logo advertising. Technologies seek to instruct, advertise and provide information using icons and logos that are becoming universally accepted. We suggest that these images are noticeable within the modern RP and hence construction and interpretation is becoming widely comprehensible (Ibid). The history of the Highway Code is one way to support this universal icon claim.

## Conclusion

The RP opens up various opportunities to view the cultural system of an organisation from several, often conflicting, perspectives. The RP provides unique organisational iconography. The RP has, to date, been seen simply as an enquiry or discussion aiding tool and its real usefulness expires after completion. We suggest that the RP, possessing the unique iconography used to represent areas of concern, should not be discarded as a by-product. These pictures are valuable recyclable assets for organisational learning. We have discussed throughout this paper the cultural distinctions of interpretation whilst identifying emergent patterns, shapes and orientations that naturally occur within the RP. We suggest, as with other picture based languages, the RP is naturally evolving to have its own unique intuitive grammar which is universally readable. The extensive graphical user icons on many technological interfaces besiege us with calls for attention and as such have impacted on society to such an extent that the iconography is being used as 'standard' in the RP. Even without syntax and rules being enforced on the RP there are distinguishable enablers that improve correct readability. Context, domain, neighbouring icons, size, text, sub-boundaries, colour, shape and orientation all help to interpret correct meaning from the picture. We accept that the RP, in its totality, is far greater than the sum of the individual iconography but we suggest there is plenty to learn from the icon elements that will aid the wider understanding process. Divorcing icons from their original picture is not advisable but exploring their meaning when coupled together could bring more enlightenment to the whole. If the RP is primarily used to explore the meaning of the group mind it is therefore reasonable to attempt some understanding of the language structure being used.

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