



DECODING AND READING ROCK ART

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ABSTRACT - Our research team did not use the term “decoding rock art” as such, we simply read the rock art. Our team found out that prehistory rock art visuals have their own grammar. Like words, visual-language with its grammar can tell stories too. Both have the time dimensions needed for story telling. Our research is about representative pictures, not abstract nor geometric art. We found out that: prehistoric, primitive, traditional and children’s paintings have nearly the same visual language. That is why we call those paintings the introductory phase of the history of painting. Its artists draw paintings to tell a story, and its contemporary observers can read their paintings. Here are some examples.

Altamira, Europe. A wild hog, drawn with eight legs = multiple image modes = read: the animal is running fast. It is drawn in the most characteristic view mode, so the observers can read it.

East Katie, Borneo, Indonesia. Drawn with front legs shorter = read: it is leaping. The bow drawn bigger = important mode = read: the mystic bow is important. The arrow drawn in the moving mode = read: the arrow makes its way to the deer.

Arnhem Land, Australia. Dugong fish hunting. A boat is drawn connected with three fish = time mode = read: that day we catch three fishes. The dugong (small whale) drawn bigger = important mode = read: the fishes are important. There are extra lines behind an oar = movement clue mode = read: the boatman behind is trying to hold the dragging movement of a fish. All objects are in the shifted mode = read: all can be seen, told and read about. The boats are upside down = the outer space mode = read: it is a hectic fishing event, our boats run crisscross (for prehistory, primitive and children, upside down is no problem).

The state of the art: traditional folk still have difficulties appreciating Western naturalistic – perspective – freeze moment art, while the modern Western man is more or less still illiterate in this visual-language. This paper suggests that traditional man and Western modern man learn from each other and live happily ever after.

RIASSUNTO - Il nostro gruppo di ricerca non utilizza l'espressione "decifrare l'arte rupestre" come tale, ma semplicemente "leggere" l'arte rupestre. Le nostre ricerche ci hanno indotto a scoprire che le immagini dell'arte rupestre sono dotate di una loro "grammatica". Allo stesso modo della grammatica delle parole, anche le immagini con la loro "grammatica" possono raccontare storie. Entrambe hanno dimensioni temporali, necessarie per la narrazione. Nel nostro studio ci siamo soffermati sulle immagini figurative, non su quelle astratte o sull'arte geometrica. Il risultato dell'indagine è che i disegni preistorici, primitivi, tradizionali e dei bambini usano quasi lo stesso linguaggio visivo. Questo è il motivo per cui consideriamo tali raffigurazioni come la fase di "Introduzione" alla storia del disegno. I loro "artisti" disegnano per raccontare una storia, e il loro pubblico coeve può "leggere" le loro immagini. Ecco alcuni esempi.

Altamira, Europa. Un maiale selvatico, disegnato con otto zampe = modalità di immagine multipla = leggiamo: l'animale sta correndo velocemente. Viene raffigurato con la più caratteristica modalità di vista, cosicché il "pubblico" possa "leggerlo".

Kutei Orientale, Borneo, Indonesia. Disegnato con le zampe anteriori più corte = leggiamo: sta saltando. L'arco è raffigurato più grande = modalità importanza = leggiamo: l'arco mistico è importante. La freccia disegnata in modalità "in moto" = leggiamo: la freccia si dirige verso il cervo.

Terra di Arnhem, Australia. "La pesca al dugongo". Viene raffigurata una barca collegata a tre pesci = modalità temporale = leggiamo: quel giorno abbiamo pescato tre pesci. Il dugongo (una piccola balena) disegnato più grande = modalità importanza = leggiamo: i pesci sono importanti. Ci sono altre linee dietro a un remo = indizio di modalità di movimento = leggiamo: l'uomo nella parte posteriore della barca cerca di trattenere il pesce che stratta. Tutti gli oggetti sono nella modalità spostamento = leggiamo: si può "vedere", raccontare e leggere di tutto. Le barche sono rovesciate = modalità spazio esterno = leggiamo: si tratta di un evento di pesca frenetico, le nostre barche si incrociano sfrecciando (per la preistoria, i primitivi e i bambini, il rovesciamento è un "non problema" nella visione). Lo "Stato dell'Arte": la gente tradizionale ha ancora difficoltà ad apprezzare l'arte occidentale che si basa su "Naturalismo – prospettiva – congelamento dell'istante", mentre l'uomo moderno occidentale è ancora per lo più "analfabeto" di fronte a questo linguaggio visivo. Per questo motivo ci auguriamo che tale intervento permetta all'uomo tradizionale e all'uomo moderno occidentale di imparare l'uno dall'altro, e di vivere per sempre felici ...

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THE BEGINNING

In 1968 our team began to research small children's drawings. It is surprising to find that usually teachers, parents and instructors in children's activities have difficulty understanding them. This is because children see and draw things in a different way from adults. We adults, the scholars, see and draw with the naturalistic-perspective-freeze moment (NPF) system of drawing from the West (globalization through colonialism). In Indonesia, since the colonial era it is taught in the primary schools up till now, while children use a different system of drawing. This is the reason why our research has tried to understand children's drawing, in the hope that the adults then can appreciate children's art. The object of our research was representative drawings, not the abstract nor the geometric.

THE RESULTS

Here are some examples of children's drawings and their visual language.

- See *illustration 1*: It is about a mini-football game. The ball is drawn in the multiple image mode, and during its course it is headed by a player drawn twice, once lying on the ground, and twice he jumps to head the ball that goes in the goal. It uses the time and space mode, and at the same time the 'twin's' mode.
- *Illustration 2* is a train, drawn from the most characteristic view (in this case the side view); it can be seen, told and easily be read. But if the rail is also drawn from the side view, it is not 'seen', cannot be told and read. So the upper view of the rail is drawn. Who teaches them? Nobody, they invent it themselves.
- *Illustration 3* shows the way children like to draw an encircling space (the collapsed mode), because if it is drawn in the 'adult' way, there might be some objects that are behind one another, not seen, cannot be told and read.
- In *illustration 4*, kites are drawn very large (important), while other objects are small. There is a sun and a moon, the happening takes place from noon to twilight, has a time dimension.

There are several other visual languages in all these four drawings. All objects are in the shifted mode, so all can be seen, told and read. At the same time all objects are in the head to foot mode, and all objects are drawn in the most characteristic view: the information is clear, and easy to read. Children use colour in a decorative way, they usually use a single colour. There are no zoom-ins and zoom-outs, so children drawing do not use a frame.

There are some samenesses between the NPF system and the children system. Both are about representative drawings, and we can recognize it. If it is like a photograph it is the NPF system, but if it has a multiple view, time, space, then it is the children's system

BIOGENETIC THEORY

Our team found that drawing from prehistory, primitive children have a similar visual language. Prehistoric man begins with play, dance and drawing, so do the children of today. Their words begin with babbles, drawing with macaroni scribbles, so do today's children. Children drawing everywhere around the world have also a similar visual language. This is in accordance with the biogenetic theory coined by Haeckel and developed by Julian Huxley, and then scrutinized especially with regard to drawings by, among others, F. Boas (anthropology), M. McLuhan (communication), C. Ricci – M. Verworn – Rothe (children's drawing) and V. Lowenfeld (psychology). In popular words Huxley says (1960: 17–19): 'Growth and development of today's child (ontogeny) reveals in "fast motion" the beginning phases of prehistoric man (phylogeny). After the age of about 12, today child growth and development will be influenced by environment and cultural background.'

THE SECOND STEP

1981–82, sparked by the biogenetic theory, our research team began to research the visual language of Indonesian traditional audiovisual media: the *wayang* scroll, the folk art of Jaka Kembang Kuning. It consists of four scrolls, and each scroll has six pictures. An example result will be given in a comparative study with children's visual-language. See *Illustration 5*. This example result is picture 1 of scroll 1. It consists of two layers (children's drawing sometimes has also layers). The characters in the back layers come first and are told first. The characters in the front layer come later, and are told later. When the back layer is told, the actors in the front layers are not yet there, they will be inserted after the back layer is told. So there are the layers mode, the head to foot mode, the shifted mode, the characters in the back layers are shifted up vertically, so they can be seen, told and read. So this picture is not a scene, but a sequence that has several scenes, it is like a film, and has time dimension. The *Dalang* (narrator – story teller) tells the story of this picture 1 scroll 1, in that order.

THE THIRD STEP

In 1984–85 our team did research on the Borobudur temple story reliefs, traditional Indonesian visual media. See *Illustration 6*. A sample result: panel 42 on the temple body-wall of gallery 1. This story relief is read the *Pradaksina* way: we walk with the temple body always on our right side. So this panel is read from right

to left. There is the *sutra* (the text), and the text depicted in this panel is in four paragraphs spread out over three pages. The Dutch expert gave the name ‘Archery tournament’ to this panel. He searched for a paragraph on a page that might be depicted on this panel. (It is in accordance to the NPF system of thinking.) He did not find it, since the Borobudur carvers use a different system of drawing. According to the text, when Buddha makes his shot, the other contestants have already left the arena. But why are there so many contestants still busy with their arrows? Which one is the Buddha? In line with the name of the panel it is likely to be the one that has just made his shot, rather to the left of the panel. But in the middle of the panel, there is only the one contestant under an umbrella (symbol of high rank); is he the Buddha? The Dutch expert finally says: ‘Maybe in this panel the carvers carve Buddha more than once’ (Krom, 1927, I: 151–3). The clue: both Buddha stand on stone pedestals (symbol of the divine). This twin mode is impossible in the Western NPF system.

In the Borobudur visual language, in accordance with the *wayang* scroll above, the story goes like this. There are two layers. The story begins with the king in the far right of the panel, watching the tournament. The back layer is told first: the other contestants are busy with their arrows, after that they leave the arena. Then the characters in the front layers are inserted. The front layer: Buddha in the middle preparing for his turn, then he steps forward, and makes his shot. His arrow (drawn bigger to be seen) is drawn just at the moment it begins to pierce the seven Tala trees, because of Buddha’s strength. Then at the precise moment all characters will be frozen, all can be seen, told and read about.

So again this panel is not a scene, but a sequence that has at least four scenes. And this panel is also not a frame, because there is no perspective and there is no zoom-in, and all characters are drawn from head to foot. The Borobudur contemporary people when they read this panel, it was as if they saw a film. So it is a happening, it has a time dimension.

MORE ABOUT THE TIME DIMENSION

For the classical physics of Newton (1687), space and time are separate entities. A plane has only two dimensions: length and width; an object has only three dimensions: length, width and height. But without the time dimension is why art in the West (painting and sculpture) becomes a space art, not a time art. Painting becomes a still picture and a statue is a still statue without any movement. That is why the system of drawing is called the NPF system.

In modern physics Einstein’s relativity theory, space and time cannot be separated, it is one entity. For Einstein a plane has three dimensions: length, width and the time dimension, which he calls the space-time-plane (STP) system, so in a picture, an object can be drawn more than once at different times and different places. While an object has four dimensions, length, width, height and time, he call it the space-time-curve (STC) system. So a statue may move! In the words of Einstein’s general relativity theory (Primadi, 2005, 85–6, from Wospakrik, 1987): ‘Space and time exist together and cannot be separated. Each object in space has its own time and space, that are not exactly the same with each other, but those objects can become a part of a common theme.’

The children’s drawing, the *wayang* scroll and the Borobudur panel are Einsteinian, but the artists do not know about Einstein and his relativity theory.

If we go back to prehistory, when man begins to make rock art, they choose the cave wall that has a blessing, they draw again and again on that wall, leaving the other walls nearly without drawings. So the drawings in the blessing wall become superimposed, one above the other. See *Illustration 7*. And when someday folks like to read the whole picture, they know that the deepest of the superimposed layers is the first happening, and then come the other superimposed up to the upper layer. So from the beginning of prehistory rock art already had a time dimension. And also all characters are shifted, all can be seen, told and read about. And all characters mainly use the head to foot mode, and the important one will be in the enlarge mode, so without perspective, without frame, no zoom-ins and zoom-outs.

The layers invention then became a tradition: background layers were told first and then the middle layers, and then the front layers, as in many traditional folks’ theatre sets, with backdrop and blocking, in the world. About the relation of time and space, McLuhan says (Primadi, 2005: 85, from McLuhan, 1964):

‘For the primitive and the aboriginal people, space is not homogenous and not ‘filled’ by objects. Each object makes its own space. Primitive people did not apprehend perspective. Einstein special theory of relativity (1906) announced the fade out of the uniform, continuous or rational Newtonian space, however useful it is in the past.’

About Einstein’s theory of relativity, Stephen Hawking says (Hawking, 1996: 36): ‘Einstein’s special theory of relativity (1906) is the cradle and did not interact with the happening. In Einstein’s general theory of relativity (1916), space and time become dynamic. When an object or force is working, the space-time-curve will be influenced by the movement of the object.’



THE FINAL STEP

With all these findings, this writer could finish his dissertation(1991), which makes a comparative study of paintings from prehistory (60 pictures, world sample), primitive (30 pictures, world sample), children's painting (35 pictures, world sample), Borobudur story reliefs (120 panels, Indonesian traditional visual media), *wayang beber* sequence (24 pictures, Indonesian traditional audiovisual media), all compared with modern art (painting, ads, animation and so on, world sample). From 1991 to 1993, we came up with (and are still expanding) a treasury of world visual language consisting of 168 modes, 120 from the NPF system (some of it also applies to the STP system) and 48 from the STP system (did not apply to the NPF system). The STP system will be explained after this.

THE FINDINGS

Our research team found out that there is another system of drawing besides the NPF system, which comes from the West. We also found out that drawing from prehistory, primitive, traditional and children have nearly the same system of drawing that can be read by its contemporary onlookers, because its creators use the same visual language as the onlookers. So this visual language is not only for reading pictures, but also to create them.

So we call all those prehistoric, primitive, traditional and children's drawings the introduction phase of painting history. This different visual language is in tune with Einstein's general relativity theory, so inspired by that, we name this other system of drawing as the space-time-plane (STP) system.

ABOUT WORD LANGUAGE AND LANGUAGE (PRIMADI, 2005:15; 2009: 3-4)

In word language, each tribe, influenced by its diverse cultural background, has a different term to call an object, for example, horse (English), *kuda* (Indonesian), *uma* (Japanese), *cavalo* (Italian), *cheval* (French), *kabayo* (Tagalog), *paard* (Dutch). *See Illustration 8.*

In visual language, the situation is different. Representative drawings from any era (since prehistory) usually can be recognized by any nation from any era. So what is more interesting in visual language is not what drawing is used to represent an object (like in word language), but the way to draw it. Since visual language is a new science, especially the STP visual language, we are compelled to invent some special terms for it.

The first is *wimba*. We call a picture inside a bigger picture a *wimba*. *See Illustration 9.* So in this picture there are three *wimbas*: the caribou, the ostrich and the horse. There are two kinds of *wimba*: *wimba* content, what object is being drawn, and *wimba* way, the way the object is drawn. The *wimba* way is used for one *wimba* to be able to tell a story. *See Illustration 10.* This giant cow is enlarged (important), in comparison with the ostrich. It is depicted in the most characteristic view, in this case the side view, easy to see, tell and read. But its very long horn is depicted in the front view (if also in the side view its uniqueness is not fully seen, told and read about). It is relatively still, stands calmly, and his tail is going to and fro (multiple image mode). This pose is characteristic of a cow when it ruminates.

Other terms are inner grammar and outer grammar. Inner grammar is ways to draw a *wimba* in a single picture that has more than one *wimba*, so the picture can tell a story. *See Illustration 11.* This rock art is from East Kutai, Borneo. The bow is enlarged, it is important. There is the trajectory of the arrow, the arrow is on its way to the deer, has a time dimension. The deer is struck by the arrow in surprise, it leaps (front foot shorter and up mode). All is drawn from head to foot, all is shifted, all is drawn from the most characteristic view, so it is easy to read, and difficult to misinterpret. Outer grammar will not be explained since it is for a series of pictures (relief, comic, film and others), that does not apply to rock art.

ABOUT THE TREASURY OF VISUAL LANGUAGE (NPF AND STP)

We choose the section which complies with rock art. There are five *wimba* ways, each way has several modes. There are four inner grammars, each inner grammar has several modes. Here are some examples (Primadi, 2005: 181-183).

READING THE ROCK ART (SOME EXAMPLES)

From Africa

See Illustration 12. The ostrich is drawn from the most characteristic view (the side view), easy to see and read. It has two legs, but three bodies and six long necks with heads. It seems that the most interesting for the artist is the expressive movement of the long neck, when the ostrich is turning away from the lasso of the hunters. But the lasso is depicted from the upper view, since if it is also in the side view it is difficult to see, so this picture uses the multiple view mode. So all is easy to see, to tell and to read.

Wimba Ways 1: Basic Shots	
<ol style="list-style-type: none"> 1. Extra Close Up 2. Very Close Up 3. Big Close Up 4. Close Up 5. Medium Close Up 6. Mid Shot 7. Medium Shot 8. Medium Long Shot 9. Long shot 10. Very Long Shot 11. Extra Long Shot 12. Make larger 13. Make smaller 14. From Head to Foot 	<ul style="list-style-type: none"> - Wimba Ways 1 (Basic Shots) have 14 modes. - 11 modes (no 1 up to 11) are from the NPF system, with its perspective and frame. These 11 modes do not apply to the STP system. - Modes 12, 13, 14 (in italic), are only for STP, does not apply to NPF, no perspective, no frame
Inner Grammar 1: Definition of Space	
<ol style="list-style-type: none"> 1. Combine shot (basic & angle) 2. Naturalistic perspective 3. Naturalistic stylized 4. Framing & relative scale 5. Relief & narrow streaks 6. Depth of Field 7. Ground Line 8. Outer space 9. Shifted 10. Layers 11. Base Line = Ground line 12. Collapsed/Encircling 13. Space Identification 	<ul style="list-style-type: none"> - Inner Grammar 1 (Angle of shot) have 13 modes. - Mode 1 to 7 more for NPF, has perspective and frame. - Modes 3, 5, and 7 also apply for STP - Modes 8 to 13 (in italic) only for STP

From Europe

See Illustration 13. This wild boar is part of the well-known rock art of Altamira. It is relatively in scale with the other creatures (bisons). It has eight legs – multiple image mode –the boar is running fast, typically the ‘boar way’, with the body straight and stiff, with the legs moving fast.

From Asia

See Illustration 14. This rock art came from India. It is a trap event. The animals are drawn in the most characteristic view – side view. The animals follow their common track, and the trap is dug in front of it. The animals are bigger (important) than the trap, which is in upper view and X-ray mode. One animal is also in the X-ray mode, with something inside its body. This needs the know-how of cultural background. In some places after they kill the animal, they will take its heart and devour it in the hope that they will become braver, and hoping for a success in the next undertaking. In another place, the trappers like the intestines, it is something delicious, it is important, must be told and read, and they draw it in the X-ray mode, to be seen.

From Australia

See Illustration 15. This dugong (a kind of small whale) fish hunting event is from the rock art in Arnhem Land. A boat is drawn connected by three fish. From the anthropological research done, this is impossible. The happening is as follows: a boat goes to sea to hunt dugong. After they catch one (by harpoon) they drag it to shore, and give it to the other fisherman at the shore to process further. The boat then goes again to sea. So the boat connected with three dugongs = time mode = read: that day we caught three fishes. The dugong drawn bigger (important = enlarge mode). There are extra lines behind an oar=movement clue mode = read: the rear boatman is trying to hold the dragging movement of a fish. All objects are in the shifted mode, all can be seen, told and read about. The boats are ‘upside down= the outer space mode = read: it is a hectic fishing event, our boats runs criss-cross (for prehistory, primitive and children, upside down is no problem).



From Indonesia

See Illustration 16. This happening is from the rock art of East Kutai, Borneo. It is hunting deer with the help of dogs. The hunter (with a movement clue around the head) is making noises and gestures to herd the deer. The dogs with their four legs spread are galloping, and the deer with its front legs shorter is leaping. Notice the difference of the legs configuration of an animal standing ruminating (the giant cow—*Ill. 10*), an animal leaping and an animal galloping.

About one single painting that tells a story

The BBC (British Broadcasting Corporation, 2005) has released a video serial called ‘How Art Made the World’. In the last one, ‘Once upon a time’, it ends with the story of Australian Aboriginal painting, whether in the old rock art, or their modern version in today’s bark painting. The video makes a conclusion like this: ‘Aboriginal artist doesn’t paint a sequence of pictures, instead they use a single stylized picture to trigger in the mind of the onlooker, stories they already know.’

From what has been explained before, and according to biogenetic theory, we now can conclude that drawings from prehistory, primitive, tradition and children are single pictures that can tell a story, their visual language has its grammar, and the pictures have a time dimension.

CONCLUSION

From the explanation above, our team did not use the term ‘Decoding Rock Art’ as such, we simply read the rock art. Rock art visuals have their grammar, so like in word language, visual language can also tell stories. Both have time dimensions, needed for telling stories.

This visual language is already socialized through seminars, either in Indonesia or abroad. It is already in the curriculum of several Faculties of Visual Art and Design in Indonesia. It is also already used as an alternative way to create art, whether traditional, modern, ads, or digital art.

From the explanation above, we also knew that not all rock art can be read by this visual language. To be able to completely comprehend the message of the rock art walls, we need also anthropological studies (for the symbolic meaning), the local cultural background (for the inhabitants’ habits), the knowledge of animal habits (standing, walking, galloping, running, running fast, leaping, rumination and so on), visual semiotic, other systems of decoding rock art and so on.

HOPE FOR THE FUTURE

With all that, the state of the art is somewhat like this: ‘Traditional folks still have difficulties to appreciate western “Naturalistic – perspective – freeze moment” (NPF) art, while the modern Western man is more or less still “illiterate” with this space-time-plane (STP) visual language. So may this paper make traditional man and the Western modern man learn from each other, and live happily ever after.’

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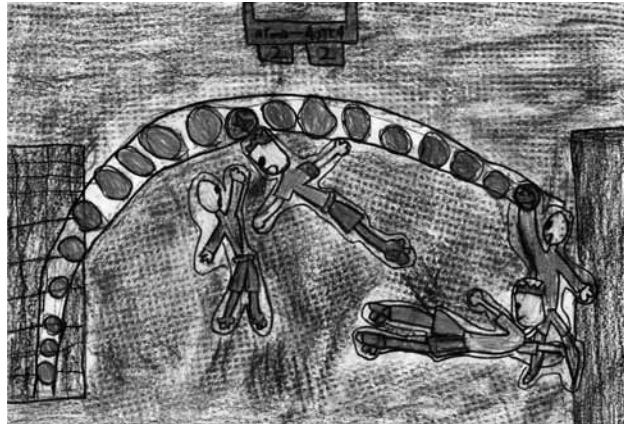


Illustration 1: "Mini Football". By Gilang Kashiragi, 7 year, Indonesia. Taken 2008, dimension 40-54 cm Collection: Luna Setiati

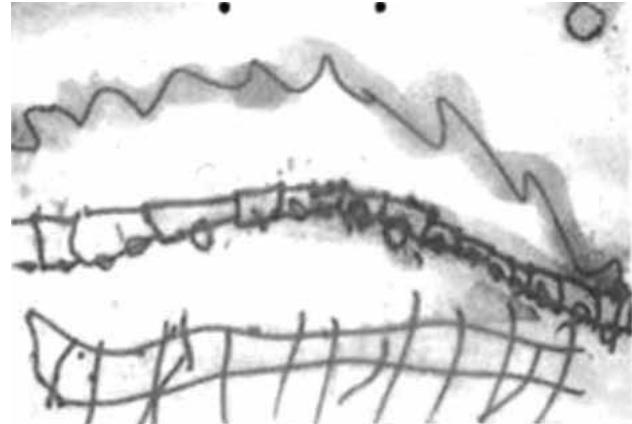


Illustration 2: "A Train". By Oki Setiarto, 7 year, Indonesia. Taken 1971, dimension 21-30 cm Collection: Primadi

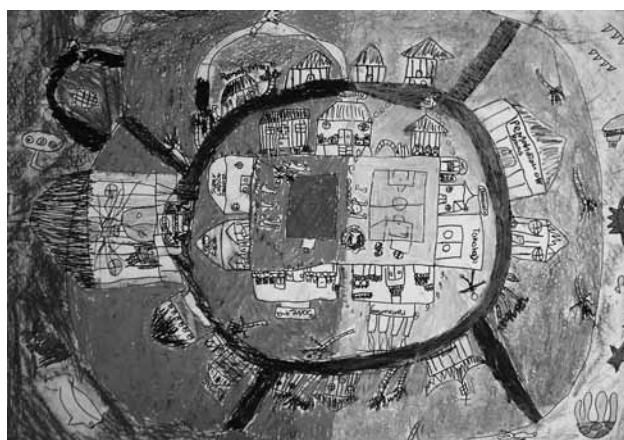


Illustration 3: "My Neighbourhood". By Aas Wrahspati, 9 year, Indonesia. Taken 2008, dimension 40-54 cm Collection: Luna Setiati

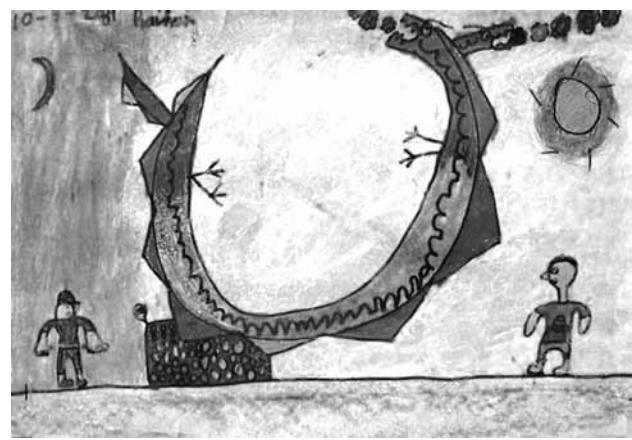


Illustration 4: "Kite Tournament". By: Azis, 8 year, Indonesia. Taken 2003, dimension 21-30 Collection: Luna Setiati



Illustration 5: "Competition Announcement". Wayang scroll: Picture 1, scroll 1. Taken 1981. Height 62,5 cm. The story: "Jaka Kemangkuning". Anonim, 1692. Slide collection: Primadi. Source: Dissertation, 1991, Primadi: ill 128a: 890



Illustration 6: "Archery Tournament". Krom, 1927: I.a, Panel 49. Height 74 cm. Anonim, year 800. Taken 1910



Illustration 7: "Cow, Deer, and Hunter". Iberia Peninsula rock art, Spain. Perello in Ucko, 1977: 426

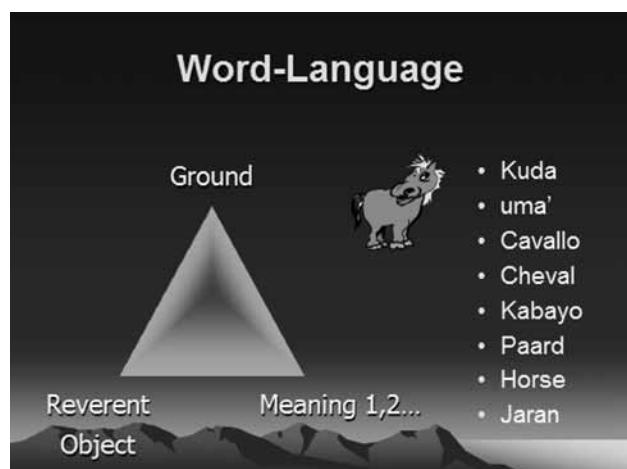


Illustration 8: "Word-Language". Concept: Primadi, Design: Luna, 2005

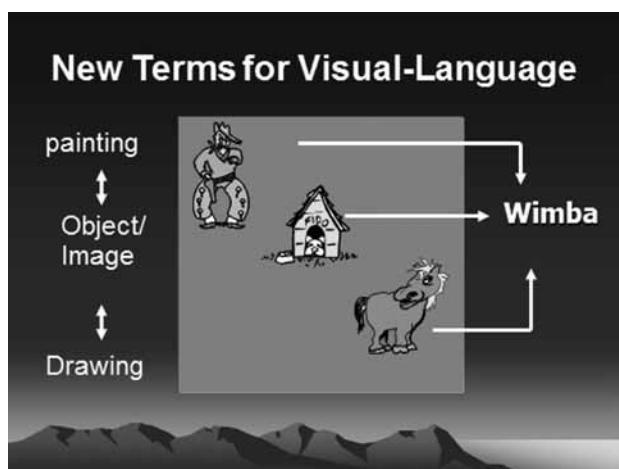


Illustration 9: "Visual-Language, Wimba". Concept: Primadi, Design: Luna, 2005



Illustration 10: "Giant Cow". Wimba Way for one wimba. Libia rock art, North Africa. Jelinek, 1974: 494



Illustration 11: "Deer Hunting". Inner Grammar for a single picture with more than one wimba. East Kutai rock art, Borneo, Indonesia. PindiSetiawan, Seminar in Viseau, Portugal, 2006



Illustration 12: "Ostrich Hunting". Matendusk, Libia rock art, North Africa. Garcia, 1969: 121



Illustration 13: "Wild Boar – Bison, and others". Altamira rock art, Spain, Europe. Christensen, 1960: 15



Illustration 14: "Trap scene". Lekhunia rock art, Central India, Asia. Radha Kant Varma, 2012: fig 112: 79

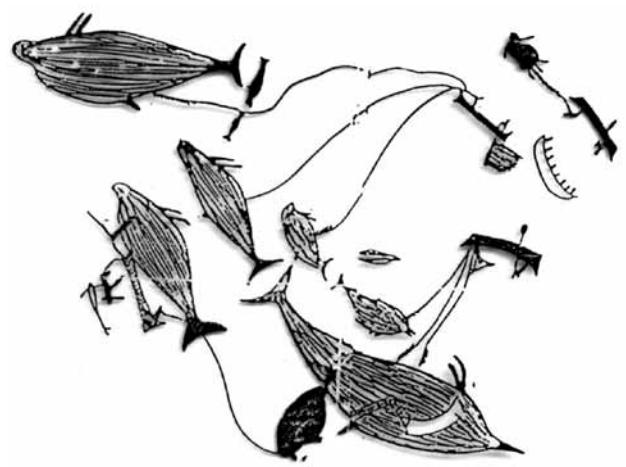


Illustration 15: "Dugong Fish Hunting". Site 2D, Junduruna, Groote Eyland, Arnhemland rock art, Australia. Mountford 1960: 314-315



Illustration 16: "Deer Hunting with dogs". East Kutai rock art, Borneo, Indonesia. PindiSetiawan, Seminar in Viseau, Portugal, 2006

