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Signs, symbols and schemas: understanding meaning in a child's drawings

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ABSTRACT

This paper examines the schematic underpinnings in the drawings of a four-year-old girl, Thea. The paper reviews literature on graphic representations, signs and meaning-making before discussing schematic *form* in children's drawings, the theoretical background for the study. The paper discusses ethical issues and methodological approaches to the study where data include drawings made at home and school, Thea's recorded talk about drawings, and video recordings of her drawing sessions over a four-month period. These were coded manually and using NVivo to identify schemas. The paper discusses examples of Thea's exploration of enclosure and trajectory schematic *form*, which are represented by rich *content* derived from her experiences and imagination. The paper concludes that Thea's drawings included many schematic signifiers with clear evidence of complex thinking around enclosures and of vertical and horizontal trajectories. The paper evidences the importance of listening to children's talk as they draw in order to understand more fully, the meanings they are making. Through signs, symbols and personal narratives, Thea used drawing as a meaningful semiotic space where her persistent schematic concerns were manifest.

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Introduction

Children's drawings are interchangeably described as 'image-texts' (Bearne and Kress 2001, 90), 'visual texts' (Albers 2007, viii), 'artwork' (Ahn 2006, ii) or 'graphic representations' (Machón 2013, 77). In this paper, we adopt the convention of Anning and Ring (2004), Mavers (2011) and Coates and Coates (2011) to refer to Thea's graphic representations (whatever, the media she used) as 'drawings'. 'Drawing' in this paper fits Paine's (1997) consideration of drawing as a creative activity 'deeply resonant with the expressive side of personality and feeling and therefore having the potential for interaction' (147). Eisner (2013) also identifies drawing as an 'elementary form of expression' (13) that allows children to develop their imagination, emotional responses and personality in a creative way. Drawing is considered a developmental product (Quaglia et al. 2015), a process and

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purposeful way of creating meaningful marks on paper (Adams 2002; Coates and Coates 2011; Hall 2008), 'a meaning-making process in which children draw signs to express their understanding and ideas in a visual-graphic form' (Hopperstad 2008, 134), or, as Longobardi, Quaglia, and Iotti (2015, 81) describe it, 'the emergence of mental representations and, thus, the ability to use a signifier to evoke meaning'. From these definitions, we consider children's drawings as multimodal artefacts, which they use to shape and represent their mental images and signs onto paper. Children's drawings are often an effective visual language, which helps them convey what they cannot easily express otherwise (Clark 2005).

Schemas in children's drawings

Athey (1990) extended Piaget's (1971) concepts of patterning in cognitive structures in relation to very young children, providing clear descriptions of specific schemas, which she identified after observing children drawing and playing. These include schemas of dynamic movement – 'vertical', and 'back and forth', 'circular', 'going over, under or on top', 'going round a boundary', 'going through a boundary' and 'enveloping and containing' (Athey 1990, 116). Children might explore a single schema or a 'cluster' of schemas where multiple schemas are coordinated in drawings, action and speech (Athey 2007, 57).

Defined as 'patterns of repeatable behaviour' (Athey 2007, 50) which provide the underpinnings of 'forms of thought' (Nutbrown 2011, 57), schemas often feature in young children's action and drawings where they include signifiers of actions, which they gradually co-ordinate into more complex schematic relationships, often representing more complex thinking. An interest in 'containing and enveloping' (Athey 1990, 116) schema, for example, can be identified in drawings featuring objects or actions which are enclosed or can be used to enclose or cover (e.g., boxes, blankets, tents, houses, a dog bed, a fish tank). The form (or forms) in the drawing are schematic and there is often consistency of *form* across many different drawings, whereas the *content* of a drawing depends on the richness and extent of a child's experiences. What a child chooses to feature in a drawing depends on their interests and concerns and on the schematic underpinning; often a more persistent thread unifying many different drawings, which have varied content. Through drawing, children can play out their 'schematic threads' (Athey 2007, 9) alongside their constructs of reality and working theories of their world. Continuities between the children's schematic 'threads of thinking' (Nutbrown 2011, 35) allow them to make connections between different concepts and content knowledge, linking, 'what children do and think, with the process of learning' (Nutbrown 2011, 35).

Athey (1990) identified that children explore schemas through four different levels: action; symbolic representation; functional dependency and thought. At the action level, children move and make marks to represent the dynamic aspect of an object or event (Atherton and Nutbrown 2016; Meade et al. 1995), and this is a point when children can employ their actions, and marks to stand for something else. For example, a symbolic representation of a vertical schema could involve a child drawing herself climbing a ladder and saying 'Me on the ladder – cleaning window' – thus, representing the schema – up and down – in action, graphic image and speech. Athey (1990) defines the third level of schematic representation as 'functional dependency relationship' where a child shows an understanding that doing one thing brings about another – a 'cause and effect' relationship, for example, dropping a ball can make it bounce. As children come to know the

effects of certain actions, their drawings often feature objects or events where things happen, thus movement occurs and things change in the process of drawing. The 'thought level' of schematic representation occurs when children can represent events or objects without props – for example, they can talk about, draw or re-enact, a bus journey without physical reminders of that event. Thought processes are reflected in verbal accounts that accompany children's schematic representations. Athey (2007) and Nutbrown (2011) draw attention to how children's dynamic schematic thinking is manifest in their drawings, dependent on their schematic pursuit – their *form* of thought and the *content* (experiences and interests) they represent.

In this paper, we take a step further to extend schematic thinking to social semiotics (Kress 1997) and the notion of meaning-making through signs and symbols (Ahn 2006; Kress 1993, 2003; Wright 2010). We suggest that schematic content form part of sign-making and meaning-making. If, for example, during their daily experiences a child is exploring and making sense of the 'circular' schema, she/he is more likely to represent this by, for example, drawing circular patterns where the *form* of the sign is a circular mark, and the *content* that communicates the meaning, denotes many things such as, a face, a wheel, a sun, a ball. Thus, children's semiotic drawings could reflect their schematic understanding and meaning-making. Here we explore the drawings of one four-year-old child, Thea, to identify both her *form* (schemas) and *content* (meaning) in coherent and cognitively composed examples of her thinking. We draw specific attention to the importance of listening to Thea's talk while she drew in order further to understand her intended meanings.

Methodology

The purpose of the study

The study used Thea's drawings, discussions of those drawings and the meanings she attributed to her drawings, to analyse how schematic concerns were intertwined in the signs she used to represent and communicate her ideas. The originality of approach lies in the documentation over a sustained period of time, of all the drawings one child did in the four-month period at home and at school. Furthermore, the use of video to capture the drawing process, and the child's own operation of this, as and when she chose, and her involvement in the data collection process adds a layer of uniqueness of the collaborative nature of the data collection process. Detailed analysis of the child's drawing activities and her verbal decision-making and interpretations of the drawings, which enabled us to analyse them schematically, provides further originality.

Research question

Taking a social semiotics theoretical framework, this paper answers the question: What schematic meanings does a four-year-old girl create and communicate through her drawings?

Ethical issues

This study was conducted in line with the research ethics guidelines provided by the British Educational Research Association, Ethical Guidelines for Educational Research

(BERA 2011), institutional ethics and integrity processes, and ethical requirements for research in schools in Malta to ensure conformity with ethical standards. Informed consent was obtained from the college principal,¹ the head of school, the parents and the kindergarten assistant. Thea's assent, both verbally and through an image-based booklet, was also obtained to ensure that her participation was not act of compliance towards an authority figure, and her willingness to participate and provide copies of her drawings was checked throughout the study.

Research methods

Data were collected over four months, during which time Thea, drew at home and in school. Twenty-six observation sessions were conducted at school, and 5 at home. In total, 84 drawings were collected (40 done at home and 44 at school) over 31 hours of drawing time. Drawing time for each drawing, varied from 33 seconds to over 58 minutes, depending on Thea's mood and availability of time.

Conversations with Thea during and after drawing (which sometimes included her parents) often further illuminated the meanings Thea intended in her drawings. Observations and conversations were video-recorded and transcribed and drawings were all either scanned or photographed. Thea also independently video-recorded herself at home, collated her drawings in display files and provided insightful comments about her drawings. She knew that others would read about her drawings and what she said about them, and once commented that she was drawing for 'others in the video-camera'. She sometimes explained to the video camera how and what she was going to draw, saying things like: 'I am talking to the people in the camera, who are watching me'. On such occasions, she intermittently stopped drawing to show her progress to the camera (something also done by a participant in Coates's 2002) study.

Approach to analysis

Data included: Thea's drawings, drawing conversations, video recordings and photographs. Coding procedures included the compilation of *transcripts* and *data logs*, which were created manually and with the use of *NVivo* software, which was also used to code data by schemas as, identified by Athey (2007).

Thea: a case study

Getting to know Thea

Thea was four years, three months old, at the start of the study, her sister Erica was six; they lived in a comfortable and spacious, first-floor apartment with their parents in a small, quiet, rural hamlet in Malta, outside the main town. Their apartment was in a cul-de-sac overlooking a natural valley. At home the family spent much time together around the large kitchen table, and Thea and Erica shared a bedroom and a separate playroom.

Thea took the 10-minute drive on the school bus each morning, where she attended Kindergarten. She seemed to love learning; recognised many letters and numbers (something valued at school) and she seemed confident, eagerly sharing what she knew with her

friends. Thea's grandparents often cared for her and her sister after school, and both parents were active in the girls' lives. Thea's mother encouraged and resourced Thea and Erica to do creative activities at home, at the kitchen table. Thea's parents often engaged in household tasks whilst talking with her as she drew. At school Thea enjoyed playing with construction toys and games with her peers; at home she seemed to prefer more solitary play, such as drawing and playing with a toy cash register, she also played online games on children's websites and watched children's television.

While, she preferred to draw at home, where she seemed more at ease and did not have to share material and resources with others, drawing was one of her few favourite activities at school and the only activity, besides role-play, which provided her with the freedom to express herself.

Content and schematic form in Thea's drawings

Fifty-two of Thea's drawings were a combination of scenes or narratives which frequently included home and outdoor scenarios featuring animals, people or objects and were habitually inspired by lived experiences. The narratives were an amalgamation of real-life episodes paralleled with imaginary stories of fantasy characters, which Thea seemed to use to employ to convey her thoughts, interests and emotions. Thirty-two other drawings were given no narration or explanation but 'catalogue[d] the everyday' (Thompson 1999, 161), and included everyday objects such as flowers, fruit, aeroplanes² and cars, while others focused on people (mainly family members) and animals, which represented her cultural, context and experiences.

In addition to the varied content which seemed to be stimulated by Thea's everyday experiences and her imagination, the underpinning schematic content in her drawings and her talk around the drawings was an important underpinning element to her meaning-making. Appendix shows the coding of all 84 drawings, their titles and the dominant graphic and speech schemas identified.

Some schemas appeared to dominate the form of Thea's drawings, and the stories she wove around them. Table 1 summarises the codings, indicating that enclosure and enveloping graphic and speech schemas dominated, with trajectory forms being the second most dominant schematic theme in Thea's drawings during the period of the study.

Space does not permit us to include all Thea's drawings so we have selected some of the most typical representing enclosure and trajectory schemas that seemed to dominate her drawings, as examples for detailed discussion in this case study.

Table 1. Summary of the schemas in Thea's drawings, ranked according to dominance.

Schema	Graphic representation	Speech representation
Enclosure/containing/enveloping/covering	76	57
Vertical trajectory	24	13
Circular	13	7
Back and forth/side to side trajectory	7	8
Going round a boundary	6	5
Under	0	0
Over	1	0
On top of	3	2
Unclassified	2	17

Note: According to Athey's identification of dynamic schemas.

Signs of enclosure

A prevailing component in Thea's drawings was her noticeable exploration of enclosure and covering schemas. Here we discuss several examples of Thea's drawings where such schemas are evidently present.

Thea drew *A woman wearing many clothes* (Figure 1); an unknown woman walking on a cold day and explained that 'she is feeling cold as it is very windy'. Thea drew the woman in different layers of clothes, including gloves and a scarf, 'to keep her warm'. She drew thick vertical lines in various colours, explaining, 'it is as if, her clothes are of different colours' each colour denoting a different layer. This could indicate Thea's exploration of the containing/enclosing/enveloping schema (Athey 1990), where the 'form' of 'inside-ness' (Nutbrown 2011, 11) was manifested by covering up and wrapping around. There is a link with the vertical schema signified by the multi-coloured lines. Thea drew the 'effects of wind' (Mavers 2011, 110), or 'indexical function' (Lefebvre 2007, 5) in a 'freeze frame' (Mavers 2011, 34) by drawing the green scarf in a vertical position, as if it was being blown up by the wind. Through her drawing and account Thea blended her thinking with her own experiences, which indicated schematic intent.

Like many of Thea's drawings, this included a skyline and an earth line (a common feature in many children's drawings [Coates and Coates 2006]), showing her knowledge and sensitivity to boundaries and what was – 'contained' within the parameters above



Figure 1. A woman wearing many clothes.

the earth and below the sky. Thea often drew an earth line marked by a green line at the bottom of the paper, and a blue skyline at the top that frequently included a sun in a top corner explaining, 'This is the sun, the sky and the grass'. Her drawing of *The Holy Mary* (Figure 2) also features these signifiers, which can be interpreted as a form of containment or enclosing boundary of the illustration between the skyline and grassline.

A man dressed as a koala bear (Figure 3) shows a similar schematic form, where Thea built up the picture by applying different layers. After drawing the sun at the top left corner, she drew her first layer. Using a peach colour, she drew a stick outline of a man (not visible in the above finished drawing), with a body, arms, legs and hands, communicating her intention, 'I am drawing a man'. This was followed by a second layer in yellow, light brown and pink, which, according to Thea, represented the man's shirt. This second layer, which mostly covered the man's body outline, seemed aimed at 'dressing' the man with a layer of clothing. The last layer made of a thick, black, circular boundary line in pencil colours, went around and formed part of the same shirt. This process of covering the man, containing the shirt within a well-marked boundary line, and her description of a man who 'is wearing a lot of clothes' again, suggests containment. The consistency in the two drawings – the covering with layers – shows Thea's 'continuity of thought' (Nutbrown 2011, 35) in exploring the 'schematic thread' of the enveloping schema through different concepts and constructs. The symbolic use of layering for clothing represents a continuity



Figure 2. The Holy Mary.

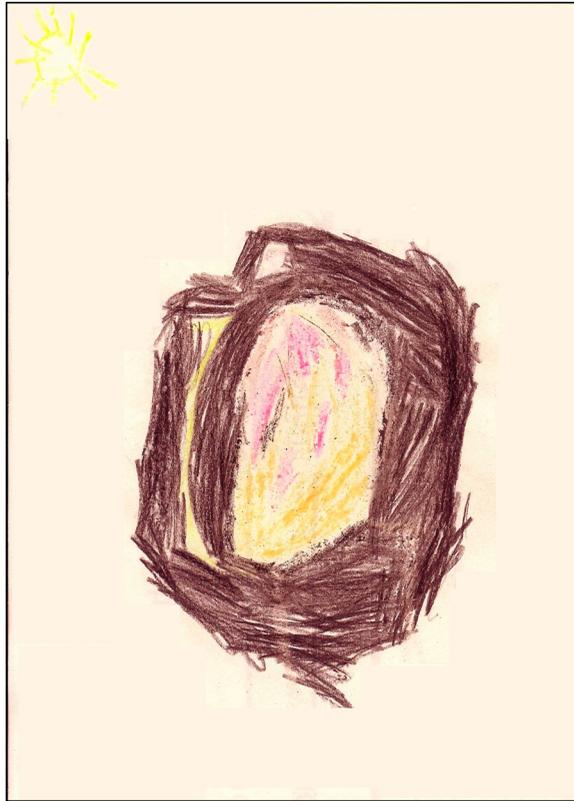


Figure 3. A man dressed as a koala bear.

across both drawings, and Thea used this symbolism in several other enclosure drawings, all with different content.

Van Oers (1997) argued that children's drawings do not simply illustrate things, but when those actions are supported with speech, they further represent meaning. The drawing alone is difficult to interpret but Thea's description and the ensuing conversation offered understanding of the subject choice and deeper understanding. This resonates with Coates and Coates's (2006) argument, that usually, the accompanying talk gives more information than the finished representation and discloses remarkable insights into the children's knowledge, interest and understanding. Talking about *A man dressed as a koala bear* drawing Thea introduced the content of 'dressing up' which added meaning to the 'containing' form.

Thea often visited an aquatic shop with her father; to look at the aquaria and fish on display, and sometimes to buy fish and shrimps for their aquarium at home. *The aquarium shop* (Figure 4), illustrates two aquaria side by side – with fish, seaweed and light. Thea's short narrative describes her illustration, 'We are at the pet shop. I drew two aquaria ... (referring to the red thick lines). These are the fish. The shrimps are here. The shrimps have died ... But the fish were still alive'. Thea drew two other aquaria drawings. *Dad coming home* (Figure 5) represented a home scene, with her father returning from work, and the shrimp aquarium on one side, and *Fish in an aquarium* (Figure 6),

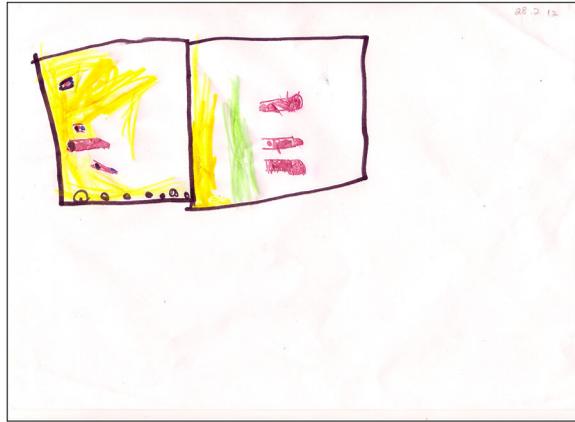


Figure 4. The aquarium shop.

where Thea drew another aquarium, including the newly purchased fish, ‘This is only an aquarium. The pink is the fish’. These drawings catalogue and celebrate the significant home events and capture the strong internal emotions and memories they generated (Anning and Ring 2004; Thompson 1999).

Filled with everyday objects, *Daddy coming home* (Figure 5) includes Thea’s representation of daddy, as the centre figure, dressed in a shirt, cardigan and a long red tie. Once again she communicated an interest in the containing schema represented by the emphasis on the multi-coloured clothing, each denoting a different layer of clothes. She also drew a huge pocket lightly marked in yellow highlighter on the right, ‘That’s the pocket ... Daddy’s pocket ... He has a lot of sweets for children’. This defined an enclosed/enclosing space, showing a direct connection to the notion of ‘insideness’ that illustrated her understandings of space, surface area, proportion and size. The rest of the drawing was a partial map of the inside the house, which together with her reference to her father’s daily journey from work to home could typify an interest in the back and forth schema (Athey 2007; Nutbrown 2011). The outside house area was represented by the drawing of two doors:



Figure 5. Dad coming home.



Figure 6. Fish in an aquarium.

the one on the left was their main apartment door, which Thea described as ‘Our door. Ours. Ours. Ours.’ and the other door on the right as ‘Aunty Karen’s door’. The doors can be seen as completing the enclosure that a home provides – to be properly inside the door needs to be closed. The house-door epitomised tenure and refuge as it protected the family from the dangers of the outside world (Nicolopoulou 1997). The aunt’s door instilled a sense of belonging and support provided by the nearby extended family. Thea also added the fish aquarium as an only object inside the house, while knowingly omitting other features in the kitchen thus making a clear decision on what to include, (Mavers 2007, 2011) and signalling that the fish tank (itself an enclosure) is *inside* the house.

Thea made several other drawings of people and things inside some form of container. In *My family* (Figure 7), Thea drew within a box, which she defined as their house, her family returning home on a windy day. She symbolised each family member as ‘all head’ (Strauss 2007, 59), creating a distinction between each family member with different hairstyles: she drew her father with spots on his head, representing his balding hair which he cut very short, she drew a fringe on her head, a personal feature which she liked and mentioned frequently, and big curls on her mother’s head. She drew no hair features on her sister, who had long, fair, wavy hair. She drew the family within a boundary, which she said was their house. The lower left corner of the picture included the front home door represented by hard lines in colour, which seem to convey a half-open door to let the family in, and simultaneously also allowing the strong wind in. Thea visually represented the wind in motion, by drawing multiple overlaid loops and swirls, with part of it visibly inside the ‘house’ and part of it outside, ‘I drew the wind... in the house downstairs’.

Thea’s ‘home’ drawings (Figures 5 and 7), represented events that happened in the real world, where she was selective in identifying which objects to draw so as to actively reconstruct the events according to her interest and meaning (Matthews 2003). For example, their front door is green, but Thea drew it in different colours, thus, conceivably representing the door as she might like it to be rather than as it was or to make it more prominent as an enclosing feature – thus the door becomes a ‘sign’ as well as an object. It stands *for something* (being inside) as well as *being something* (a door). The meanings in each of



Figure 7. My family.

the examples described above show how Thea was classifying and structuring her thinking (Cox 2005), in order to create a 'complex ensemble' (Mavers 2011, 89) of cohesive meanings that relied on each other and reflected her context, thoughts and 'existence in the world' (Dyson 1993, 230) as understood by her. Both drawings (Figures 5 and 7) seem to unravel a plethora of meaningful attributes that transformed the 'unremarkable' everyday things into 'remarkable' (Mavers 2011, 124) processes of meaning-making.

Thea communicated her knowledge that babies come from 'mummies' tummies', with mummies having to prepare in advance for the birth of the baby, indicating a sense of maturity and nurturing care (Figure 8). This is supported by the following extract from a conversation during the drawing:

- Thea: ... This is the baby's boat.
 J: Where is the baby?
 Thea: In her tummy ...
 J: Has she already bought him a boat even if he is still in her tummy?
 Thea: She is preparing everything for the baby ... She has lots of toys ... She has two umbrellas. One for the baby in her tummy and one for her.

A further example of 'insiderness' was *Travelling in a car and aeroplane* (Figure 9), Thea made at school whilst sitting next to her friend Neil at the drawing table. Thea's



Figure 8. Erika and mum.

drawing was mostly developed by ‘copying’ Neil. It illustrates a superhero and herself in a car. Thea’s character was inspired from Neil’s drawing of Sonic the Hedgehog®, a powerful PlayStation® hero who runs fast and fights ‘bad guys’. The resemblance between the two pictures is striking. Thea explicitly and overtly, copied Neil in the drawing of the car, in the colours she used, the gas pedals, the characters she drew and the name-writing



Figure 9. Travelling in a car and aeroplane, Thea’s drawing (top of Figure 9), shows striking similarities with Neil’s (bottom of Figure 9).

(Neil's real name is obscured to protect his identity), confirming that when children work together they are likely to influence each other in the content and direction of their work, in the way they use materials and in the way they interact (Coates 2002; Coates and Coates 2006).

Neil was the first to begin drawing, with Thea evidently copying his atypical car outline, and declaring her intention:

- J: What are you drawing Thea?
 Thea: It is like Neil's.
 J: What are you drawing Neil?
 Neil: It is a car. It is our car.
 J: And what is yours Thea?
 Thea: A car too. It is our car. I am going to draw like Neil.
 J: So you are going to draw everything like Neil?
 Thea: I am copying Neil exactly. (To Neil) I am drawing exactly like you.

Neil began drawing strokes using a different marker each time, with Thea following suit. She patiently waited for him to finish each section of the colouring then pass the marker to her. It took them over 28 minutes to finish their drawings, during which time they continuously discussed the drawing in 'a collaborative emergence of conversation' (Sawyer 2002, 67), where they 'articulated collegial interests' (Dyson 2010, 17) and 'co-designed' intentions (Kangas, Kultima, and Ruokamo 2011, 79) influencing each other's ideas to add details in 'joint shaping of meaning' (Mavers 2011, 49). In this process of dialogic interactions and 'conversational context' where through 'complementary or improvisational collaboration' (Dyson 2010, 17), they drew on each other's experiences and knowledge, they co-constructed and co-authored complex and meaningful 'collective social product' (Sawyer 2011, 29).

It could seem that Thea was merely imitating Neil, without any significant engagement in meaning-making, yet she was actively evaluating Neil's drawing and comments, and 'borrowing' (Dyson 2010, 18) his ideas; she sustained, transformed and adapted her drawing through her continuous decision-making. Neil's drawing of the car seemed to appeal to Thea's interest and, if she was pursuing an interest in enclosure – Neil's idea of drawing a car connected well. In a further schematic signifier of enclosure Thea drew herself wearing a helmet:

- Thea: That is me with a helmet ... because I was going to drive a motorcycle to go near him (referring to Neil).
 Neil: Aren't you afraid to drive a motorbike?
 J: (to Thea) How do you know that you have to wear a helmet to drive a motorcycle?
 Thea: Because once I went to see a motorcycle and I saw people wearing helmets driving by on a motorcycle. Vruuummmmm.
 J: Why do they wear helmets?
 Thea: So that if they fall off the motorbike they will not hurt themselves.

That Thea noticed the helmets when she watched the motorcycle display indicates her attention to this form of covering.

Another mutual exchange occurred when Neil stated: 'Sonic© and I will stay in the car', with Thea echoing, 'I am going to stay in the car as well'. Thea knew that fuel made cars move, just like the characters 'Fuel' and 'Sonic' who ran very fast. She also knew where the fuel was put into the vehicle and drew a place for this (another enclosure signifier). The

outline of the vehicle, which encapsulates the whole drawing and narration could be seen as conveying Thea's explorations of the enveloping/containment schema, that of being 'inside' the vehicle. Thea perhaps modelled her circular car shape from Neil's, because the enclosure element in his drawing matched her schematic interest and provided the initial interest to develop the illustration within the form of the car.

Signifiers of high and low, going and coming: trajectory schemas

Two other prominent schemas that emerged in Thea's drawings were vertical and back and forth schemas, which resurfaced in the drawing *Travelling in a car and aeroplane* (Figure 9).

Immediately after drawing, *Travelling in a car and aeroplane* (Figure 9), Thea's description was distinctly different from the narration that occurred between her and Neil whilst in the process of drawing. She developed a storyline that was uniquely hers illustrating how the characters and objects in drawings can be a vehicle to tell a story (Coates 2002).

- Thea: (This is) a van (referring to the drawing of the car). This is me with the helmet. This one (Fuel) has a helmet too ... His name is Eath (pointing to the letters.)
- Neil: We should not be wearing a helmet because we are driving a car not a motorcycle.
- J: Where are they going?
- Thea: They are going to Sweden. After they go to the airport with a van they catch a plane and then keep the helmet.
- J: Do they keep their helmets on when they are on the plane?
- Thea: Yes. This is the aeroplane. I am driving the aeroplane.
- J: Are you the pilot of the aeroplane? So, first it was a van and then it became an aeroplane?
- Thea: And this is a woman (pointing at Fuel) and I am a boy ... No, this (pointing to what was a drawing of her in red) is daddy.
- J: So that turned out to be daddy now?
- Thea: Yes. This is daddy driving and this (pointing to Fuel) is me.
- J: So this is daddy and this is you. And what is daddy driving?
- Thea: The aeroplane.
- J: The aeroplane. And you are going Sweden, right?
- Thea: Yes ... At Aunt Victoria.

Thea's multimodal text *Travelling in a car and aeroplane* (Figure 9), her drawing conversation with Neil and her final reflection on of her drawing at the point where she had finished drawing, contain several enclosure signifiers and trajectory schema; travelling, speed and the importance of departure and arrival end points are identifiable. Thea transformed the car she originally drew with Neil into a van, which she drove to the airport. The van then became an aeroplane (which took her to Sweden near her Aunt Victoria), first piloted by Thea and then by her father. The car, therefore, became the 'vehicle for invention ... and possibility' (Hawkins 2002, 215). 'Fuel' lost his identity of a superhero where Thea first transformed him into a woman, then into a drawing of herself. The stick figure, which initially represented her, became Thea 'as-a-boy', and immediately afterwards this same figure became her daddy, thus creating a complete story with articulate meaning. Through her narration, Thea ensured that account text, which was different from Neil's was being conveyed; she made 'explicit the implicit dynamic aspects of ... [her] intended meaning' (Van Oers 1997, 242), and some of that dynamism was schematically significant.

Thea's meaning-making was generated both during the drawing process and when the drawing was finally complete. This process included drawing and reflection on the drawing, which for Thea, was one seamless event and consisted of the generation of meanings attributed when reflecting on the drawing immediately after it was completed, as well as whilst creating the drawing.

When Thea drew her car which turned out to be inclined to one side, she quickly drew a rock underneath and transiently attributed a meaning to it: her car was resting on a rock tilted upwards, in such a position that it was visibly higher up on one side that it could 'reach the sky'. This complex connection, seems to underpin Thea's interest in the vertical dynamic schema which she was able to integrate, make sense and represent her understanding and cognitive structures of 'upness' and 'downness'. Thea once related an experience, of travelling in a car with her family along a bumpy road and feeling the tilted position of the car. A later extension of the prevailing 'continuity of thought' (Nutbrown 2011, 35) of the vertical schema included a description of the gas pedal functioning as part of a pulley system. Underneath the drawing of 'Fuel' and the writing of his name, Thea drew a black rectangular shape. Using words and gestures Thea explained that this was, 'a bowl so that when the gas pedal is pressed, this one, Fuel, falls into the bowl'. Thea appeared to be fascinated with cause, effect and functional relationships of things. This inquisitiveness, into how things worked, her emphasis on objects that 'fell down', signified with words such as 'pressed' and 'falls', conveyed a sense of 'downness' and she appeared to be trying to make sense of the vertical schema. Her comments matched the actions in her drawing explaining *form* and described *content* thus creating her own schematic meaning.

In some of Thea's drawings, patterns of vertical schema were intrinsically intertwined with back and forth schema. Thea for example, used her finished representation of the vehicle to make sense of moving between point A to point B, communicating concepts of 'here' and 'there': from a 'starting' to a 'finishing' point (Athey 2007, 80). The account of travelling from departure to arrival, between one country and another, marked a journey from her home to her Aunt's home in Sweden, thus, connecting the two homes and locations. Thea showed awareness that the journey was not straightforward and entailed stopping at different in-between places, such as the airport, and changing the type of a vehicle used at different stages. This journey was partly explained by Thea, 'They are going to Sweden. They go to the airport with a van and catch a plane and then keep the helmet'. The fact that the story was based on the notion of journeys and journeying, where the aim was to take people from Malta to Sweden, using different means of transport to get to different places, confirms Thea's interest in understanding vertical, and back and forth schemas at different levels and in so doing to think about notions of distance, speed and space. The aeroplane *content* apparently stimulated by family travel experiences, was also representative of the *form* of containing.

What can we learn from Thea?

This paper has investigated the multiple layers of meaning-making a young child created and communicated through her drawings. It contributes to our understanding of the richness of a young child's unique, original, meaning-making process through a semiotic perspective. Thea's drawing often featured unconventional signs, and symbolic resources

to signify central ideas where drawings were a reflection of self, of interests, and of practices. Thea's personal narratives and interpretations whilst drawing were ways of meaning-making, which Thea used as a meaningful semiotic space where her persistent schematic concerns were manifest. Observations of Thea drawing show that she frequently used the drawings as 'an inherently playful activity' (Wood and Hall 2011, 279), drawings as 'spaces for intellectual play' (Wood and Hall 2011, 267), where she concocted, pretended and transformed meaning to create the world as she liked it to be. The examples in this paper show how Thea was playing *at*, *in* and *with* drawing (Wood and Hall 2011, 267), all of which were informed by the rich *content* of her own experiences and imagination, and taking the schematic *form* of enclosure, vertical and back and forth trajectories.

A key implication of this paper, and what we can learn from Thea, is the importance of drawing in children's constructions of their understandings of life and or the world. Looking under the surface of Thea's drawings and bringing a schematic analytical lens, provides a further layer of meaning and offers deeper insights into her forms of thinking than does content analysis alone. Having insight into Thea's forms of thought as portrayed in her drawings as well as her understandings of the world around her provides an indication of what might be offered to her in order to extend her thinking and her learning. Educators who reflect on young children's drawings can consider what *forms* of thinking need to be nourished with further rich curriculum content. Drawings of fish may not indicate an interest in fish per se but a drawing of a fish in an aquarium can indicate an interest in *containing*. Having insight into the underpinning schematic forms of thinking as identified in children's drawings and their accompanying talk, can be used further to support their experiences and their learning. In this sense, drawings need to be seen *en suite*, as they are here in Thea's case, to identify trends and preferences.

Notes

1. State Schools in Malta are organised in groups of 8–10 schools called 'colleges' led by a principal. Each school has a headteacher.
2. Due to the size of the Island, no one in Malta lives more than 20 miles from the airport and planes taking off and landing are an everyday occurrence.

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Appendix. Schematic coding of all 84 of Thea's drawings

No	Drawing Title	Dominant schematic content:	
		Graphic	Speech
1	<i>An man dressed up as a koala bear (Figure 3)</i>	E	E
2	Fruit and vegetables	C, E	–
3	In the garden	E, V	E, V
4	<i>A woman wearing many clothes (Figure 1)</i>	E	E
5	The crab	E, B&F	E, B&F
6	The turkey and the elephant and flying numbers	E, B&F	–
7	The oven	E	E
8	My face	C, E	–
9	Me as a crab	E, B&F	–
10	The fairy princess	V, GTB, OT	–
11	My fourth birthday party at school	E	E
12	The snail	C, E, GTB	E
13	The wrong way	E, V	B&F
14	The dying princess	–	E
15	The number 3	–	–
16	Things falling in my dream	V, E	V, E
17	Grass	E	E
18	An aeroplane	E, V	E, V
19	Presents or fruit	E	E
20	A fan	GTB	B&F
21	A wicked witch	OT	OT
22	Flying hearts	B&F	B&F
23	An aeroplane	E, V	E, V
24	Grass and sea and sky	E	E
25	Pixie dust and stars in the sky	E, V	E
26	Daddy's plane	V, E	B&F, E
27	The strong man	E, V	V
28	A monster story	V, E	V
29	A tunnel to go to the farm	E, GTB	GTB
30	Romina's aeroplane	E, V	E, V, B&F
31	IWB [interactive white board] activity	E	E
32	Another monster	E, V	–
33	Lions breaking a ladder	V	V
34	My name and me	E, V	–
35	Freeing animals stuck in a tree	E, V	E, V
36	An angry you	C, E	–
37	Lions babies and computers	E	E
38	A ship	E, B&F	E, B&F
39	A snail playing a guitar	E, V	E, V, B&F
40	<i>Travelling in a car and aeroplane (Figure 9)</i>	E, V	E, V
41	The snake story	E, B&F	E
42	A giant story	E	E
43	Our classroom	E	E
44	Inside my tummy	E	E, GTB
45	A man in the rain	E, V, GO, GTB	E, V
46	<i>The Holy Mary (Figure 2)</i>	E, V	–
47	Grandpa	E, GTB, C	–
48	A car with a heart	E	E
49	The card	E	E
50	The glasses	GTB, C, E	GTB, C, E
51	Our house	E	E
52	<i>Erica and mum (Figure 8)</i>	E, GTB	E
53	My loveable grandpa	E	–
54	The reindeer	E, OT	E, OT
55	On the farm	E	E
56	On the road	–	–
57	Myself	E, C, GRB, GTB	E, C, GRB, GTB
58	Muddy puddle	E	E

(Continued)

Continued.

No	Drawing	Dominant schematic content:	
	Title	Graphic	Speech
59	Me in the rain	E, CGRBV	E, C, GRB, V
60	Rings and hearts for Dominic	E, C, GRB	E, C, GRB
61	Decorations, a wine bottle and ice cream	E	E
62	The mouse	E	E
63	Frogs in the sea	E, C, GRB	E, C, GRB
64	<i>Dad coming home (Figure 5)</i>	<i>E, V</i>	<i>E</i>
65	A flower	EC, GRB	E, C, GRB
66	<i>My family (Figure 7)</i>	<i>E</i>	<i>E</i>
67	<i>The aquarium shop (Figure 4)</i>	<i>E</i>	–
68	<i>Fish in Aquarium (Figure 6)</i>	<i>E</i>	<i>E</i>
69	A princess story	E	E
70	McDonald's box	E	E
71	Animals hide and seek	E	E
72	Front and Inside of a card for Bernadette	E	E
73	Luke	V, E, GTB	–
74	An aeroplane, a house	V, E, C	E
75	The shark	E	E
76	My family	E	E
77	Two churches, roundabout and a swimming pool	C, E	C, E
78	An angel and a butterfly	V, E	–
79	A monster story	E	E
80	Dad waking up	E	E
81	Animals not allowed	E	E
82	A flower for you	E, GRB	–
83	A flying butterfly and decorations for you	E	–
84	A card for you	E	–

Key:

Code	Schema	Code	Schema
E	Enclosure	GRB	Going round a boundary
C	Circular	V	Vertical
GTB	Going through a boundary	B&F	Back and forth
OT	On top of	GO	Going over
V	Vertical	–	unclassified

Note: Those discussed in this paper are highlighted in bold italic.