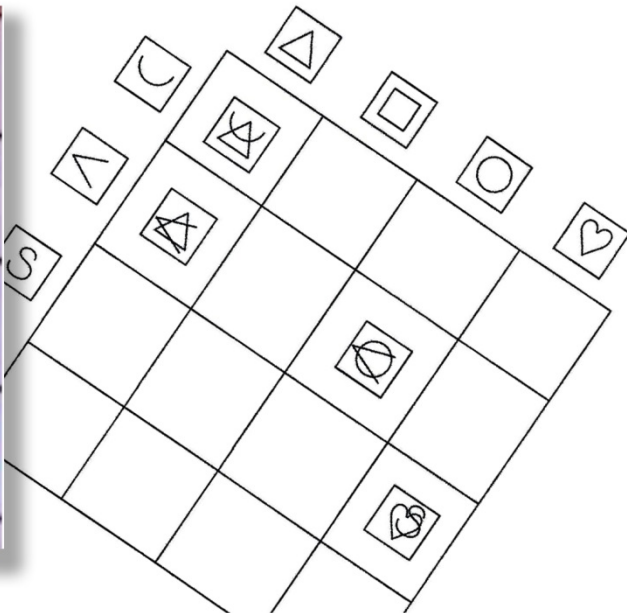


# An Introduction to Intersectional Sorting



	10yr	4yr	5yr	7yr	
black hair				Jim	blue eyes
brown hair		Mary			green eyes
fair hair	Bill				brown eyes
auburn hair			Kay		grey eyes
	dog	cat	bird	fish	

Grid with information on all four sides.



## **WHAT IS INTERSECTIONAL SORTING?**

- 1) Intersectional Sorting is a game or activity which involves putting two or more pieces of information together into an intersect.
- 2) I.S. involves using a GRID so that sorting along one line can be combined with sorting along another bisecting line which produces a combination of 2 sets in the intersect.
- 3) In order to be able to Intersectional Sort a child needs to be able to PLACE sequentially in squares along a line; to SORT objects and cards at a high enough level to categorise and change criteria with confidence and understanding. In addition, the ability to follow 2 lines with separate pointing fingers and bring the 2 fingers together into the intersect square is essential for the child to learn the game. Waldon suggests that confident Intersectional Sorting is established around 7 years of age.
- 4) I.S. is a tool for collecting data, remembering information, exploring different ways of displaying information, using this information and building up knowledge and understanding about information through transformation and abstraction. SERIATION, the ability to sequence at a high level, is another way of displaying and understanding information as is CODING all of which mental tools leads to later skill learning like READING.
- 5) I.S. is ultimately a mental tool/ability which allows us to keep more than one piece of information in our minds at once and which can lead to a transformation of thoughts or ideas. Great for the later ability to argue!
- 6) All the early 'Learning to Learn Tools' must be established in order to use the GAME of Intersectional Sorting to Learn.

## CAN YOU TEACH INTERSECTIONAL SORTING?

The short answer is No!

In order for any child (or adult) to understand and 'play' the Intersectional Sorting game the early Learning- to- Learn Tools must be established first. These Tools, acquired through the play of the young, normally developing child, cannot be 'taught' but reflect the child's understanding of the physical world around them. In the Functional Learning/Waldon lesson we *can* give the delayed child *opportunities* to explore and develop these Tools for themselves over time but we cannot 'teach' them in the conventional sense.

The ability to Place and Sort and change criteria with confidence must be fully established before a child can 'play' and understand the Intersectional Sorting game. However, you can give the child the opportunity to explore Sorting in lines and on grids and early Sequencing including 'men in boats', chaining etc which together combine to build up the linear experience for him/her over time.

Using the pointing finger to follow a line along the grid or chain etc is essential. If the child can follow or trace 2 separate lines and stop the 2 fingers at the intersect, then he/she is on the way to being able to Intersectional Sort. Like all Waldon activities, which are based on the play of normally developing babies, there has to be the all important physical activity and effort as preparation before the later less physical stages (eg visual preparation) can be mastered.

So in Intersectional Sorting you can 'show' the child the rule to place the card on the intersect square but unless the child has understood the underlying principles outlined above, the game will make little sense.

# **ESTABLISHING THE INTERSECTIONAL**

## **SORTING EXPERIENCE**

1) CHANGING CRITERIA: In order to understand an intersect the child must be able to sort objects and cards and change criteria. Sorting objects which have a variety of shared attributes is a good way of establishing this. If the child has language he/she can explain the sort after the activity but it becomes quite clear to the practitioner whether the new ideas are understood or not whilst the child is working. Objects can be amassed so they can be sorted by category eg lids/utensils/furniture. Then be re-sorted by Material eg wood/plastic/metal; by Size eg small/medium/large and then again by Colour. Different containers can be used to signify sets of objects including bowls, bags and linear grids made up of single squares as well as the sorting boards (usually 3 times 3 squares each) for cards.

2) Intersectional Sorting uses a GRID which can be made up of squares on a floor/carpet, on the playground, on a table top board, on paper and can have as many squares as necessary (including more than needed) and of different sizes.

3) SETS which are sorted on a grid can be objects, cards, drawn images by adult (and child) or a combination of these.

4) Being able to PLACE objects on a grid rather than placed on a sorting board needs some practice illustrated in figure 1.



Figure 1



5) PLACING objects in a line can establish a sorting criterion see figure 2.

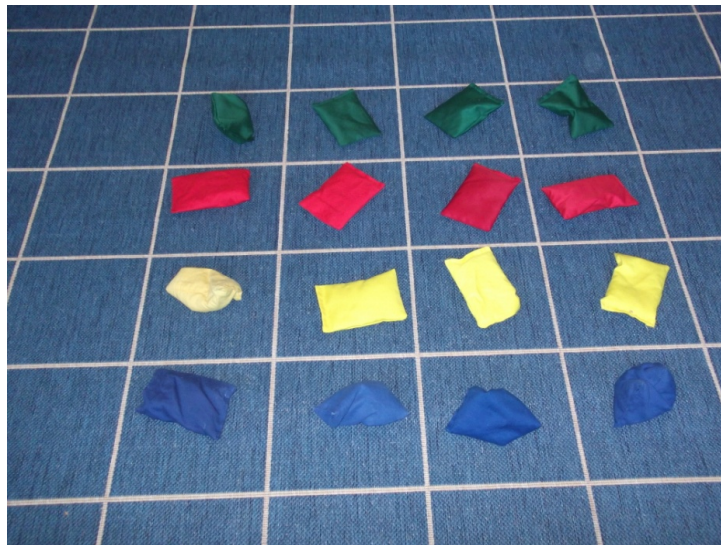


Figure 2

The lines of a sort needs to be practiced all over the grid.

6) PLACING 2 objects together in the correct square does NOT mean that the child understands Intersectional Sorting.



(The child in [Fig.3](#) does not understand the technique yet.)

7) INTERSECTIONAL SORT USING OBJECTS shown in figure 4:



Figure 4 shows how a game might look on the floor using objects.

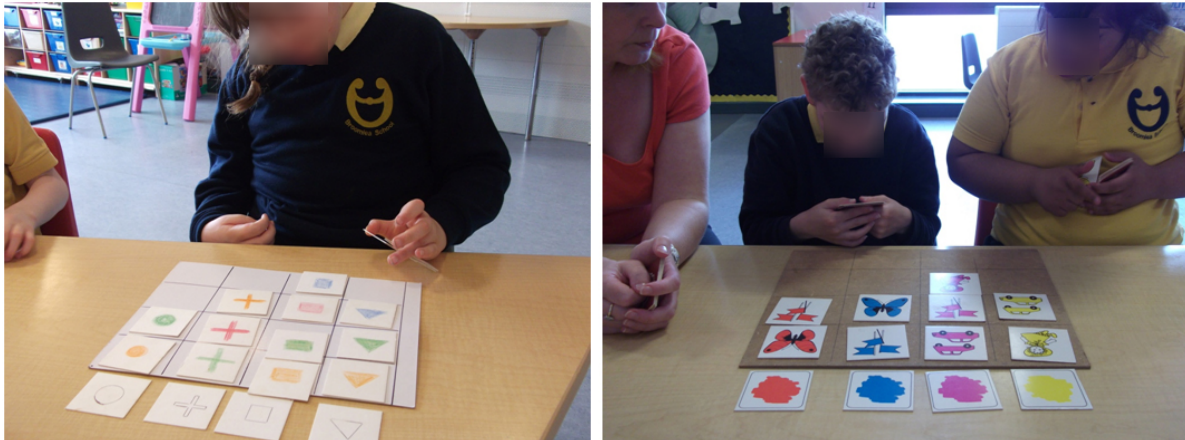
Models (see 11 below) are placed around the grid to show how to sort.

8) OBJECTS GLUED ONTO CARDS: Using objects and materials glued onto cards can establish a transition from objects to cards (I use these for Pairing and Matching and early separating too.)

9) POINTING INDEX FINGERS: When first using cards on a table grid emphasise the lines and bisects and intersects by pointing your two index fingers along the lines and/or show the children using their own pointing fingers (ie hand over hand). Tracing along the lines explains non verbally what the game is about.

10) SETTING OUT CARD PROTOCOL: At all times the practitioner must be clear when he wants the child to join in the game. If the child wants to join earlier than the practitioner has in mind (for whatever reason) then the practitioner can quietly place hands over the child's to 'explain' that he or she must wait until the setting out is complete. Equally, the child learns to wait when the cards are collected by the practitioner at the end of the game. Many of us will remember Geoffrey Waldon carefully picking up cards in his particular order so that they would be adequately shuffled for the next time they were used. The child would wait patiently and it was part of the game itself.

11) Initially, MODELS are placed around the outside of the grid to explain how to sort the cards.



Figures 5&6 show children sorting cards for shape and colour.

12) SEEDING. This involves the practitioner placing cards on the grid itself. These cards (plus the Models outside the grid) explain how this particular game works. It is a bit like placing objects into bowls for the child to follow a sorting criterion. In the early stages the practitioner may seed most of the cards on the grid and the child is left to place only a few cards at the end.

13) CARDS CAN BE PRESENTED in different ways. For example one card at a time; all the cards in a pile upside down; the cards placed around the board on the table, with a marker on the board to show which square needs to be filled. The pile of cards may have more cards than necessary for the game so that the child must reject some. Later use obstruction games so that the child needs to search in containers or around the room to find the card which best fits the available square.

14) ORIENTATION: This is important to get established from the beginning as later higher level sorting usually requires not only higher level of discrimination but more complicated orientation within the cards. So the child must learn to notice and follow the Model or Seeds for orientation.

In the early stages when the child is sorting for colour, for example, they might place a brown cow card upside down. The child may have placed the cow in the line for brown but did not add the orientation. Here the facilitator will probably leave the orientation to the child. However if there is a Seed on the grid which explains the cow should be standing up, it may be that the facilitator quietly points to the upside down cow and then turns it so it is the



'right' way up whilst the child looks on. Later, the facilitator might just point and trace a circle over the card for the child to pick it up and turn the card around. If not, then the facilitator may pick the card up with the child hand over hand and rotate the card between 2 hands and help relocate the card on the grid with the correct orientation. Of course orientation is practiced within Matching and Sorting card games. There is no language necessary here.

## **HIGHER LEVEL INTERSECTIONAL SORTING**

1) HIGHER LEVELS OF INTERSECTIONAL SORTING involve higher level of discrimination, orientation and more abstract sets (eg sets which indicate temperature, speed, emotions). It can stretch the intellectual and emotional abilities of the child and often it is very exciting to see the child making leaps in problem solving. **BUT** as in ALL Functional Learning/Waldon activities the practitioner must gauge very carefully where the child's abilities lie in each lesson: This is a sine qua non when working with children who have developmental delay. In order to keep anxiety at a minimum or within the bounds of what you think the child can tolerate at any one time, always plan every lesson but be ready and flexible enough to move levels and change gate posts. Be hyper vigilant around HOW the child works all the time and be ready for the unexpected!

2) MAKING CARDS: If possible help the child make cards for a game even if this is one card at the end. Also this might substitute *saying* the words if the child has no language.

3) WORKSHEETS: When using paper and pencil on pre-drawn grids use a variety of images which are relevant eg if the child is learning to write then use letters to build up words. Games can be tailor made for each child around their family, their interests at school, home and the outside world.

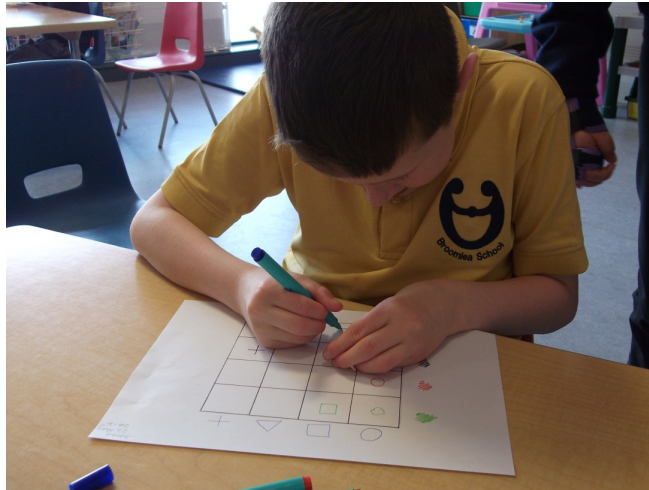


Figure 7 shows a child able to Intersect Sort confidently on a worksheet.

4) SETTING UP THE GAME: When the child understands the Intersect process he/she can work out the sorting criteria without the physical Model needing to be placed outside the grid. The Model (in mind) can be abstracted from the seeded cards already on the grid. As the child solves the problem of the set criterion he/she might then be 'asked' to place the Model cards on the outer grid as part of the activity. Models can also be placed with spaces round the grid so that the actual sorting lines have gaps between them. This can be an added level of difficulty where the eye/brain has to work harder to keep information in mind.

5) CHANGING YOUR MIND: Cards can be Seeded with 'mistakes', or at the end of the game you can change one or more Model on the outside and the child has to move cards around on the grid to re sort 'correctly'. Making changes should involve the use of 2 hands so that the first card is picked up and before it can be replaced the second card must be picked up in the other hand. The act of changing one's mind can be very challenging for many children and has to be approached carefully. In itself, the Intersectional Sorting Game is a wonderful tool to help children learn to tolerate changing their mind.

6) SHARING GRIDS AND OBJECTS/CARDS in a group has to be handled carefully. Even though individually, children may Intersect Sort at a high level, when they join a group other things come into play. Group dynamics can be very complicated and a working group depend so much on the emotional maturity of the individuals. The facilitator will normally have to be flexible and drop levels to start with.

Offering one object or card to each child at a time to place whilst the others watch sitting down, is usually the best way to start. Later, give each child 2

objects or a single card for the intersect. Standing a child in a square to indicate which square needs to be filled next, can work for a group if the child can stand still! They can ask another child for the objects he/she needs for the square he/she is standing on. Later still the group can work out how to take turns. If you have a group of talkers the practitioners may need to referee discussions about why one child wants to move an object or card on a grid and why another wants to change it back!

## **HOW DO YOU MANAGE 'MISTAKES' ON THE GRID?**

When we work with children using the Waldon/Functional Learning Approach we are interested in how the child approaches the tasks and it is up to us, the facilitators, to provide the child with enough opportunities for building up the early Learning-to Learn Tools. There is not the 'right' or 'wrong' way of doing things. Certainly, in early childhood there are tasks like tying shoe laces correctly which are learned but in order to do this a child will need to have experienced plenty of 'play' activities beforehand.

BUT how do we, as facilitators, manage situations in the higher level games like Intersectional Learning where the Tools for learning have been established and yet the child makes 'mistakes' on the board? The answer of course depends on the stage and understanding and tolerance of the individual child. So a child may have the underlying sorting and placing but is taking more time than expected to understand an intersect. When confronted by a new game the child might become anxious and be unable to keep the 2 pieces of information he/she needs to solve the problem or reorientate cards 'correctly'. Initially the cards used for Sorting will be well within the child's experience and understanding but using a different grid might create new issues.

There are various ways of supporting the child through the games from the early stages to later stages when the cards can get VERY difficult both for child and facilitator!!

1) Sometimes the practitioner can point to a card on the grid that the child has placed 'incorrectly' and replace it 'correctly' themselves. This can be done by

pointing to the card and showing the new position on the grid for the child by tracing the lines with pointing fingers first. Other times it is done more discretely.

2) We might leave the 'mistake' for the child to notice later in the game.

3) Sometimes the facilitator may remove the card from the board and place it back onto the pile in front of the child, unobtrusively.

4) Very often a 'mistake' gives us a clue that the level may be beyond the child's understanding. The child's ability to sort may be compromised by the techniques involved. So we quickly shift the emphasis whether by sharing the game (my turn/your turn which often lowers the anxiety levels of the child) or accepting all the placements and then changing the cards or level next time.

5) Sometimes slowing the child down by 'asking' him/her to wait between placing allows the child time to think. The child may get anxious about completing the task rather than thinking through each placement.

6) Also, varying how much seeding is on the board can take the pressure off the child.

7) Sometimes the 'mistake' is an orientation placing so usually the practitioner will rotate cards unobtrusively. Sometimes there is a need to show the child about orientation and then this can be done by moving the card round hand over hand with the child. If a game requires a lot of reorientation then the level is too high. The child should not need to know this, of course. (see Orientation above)

8) Sometimes the practitioner seeds mistakes in order for the child to tolerate and learn to change his/her mind. When sensitively managed the child will begin to see the possibility of unmaking a mistake he/she makes when the game is played independently.



## USING THE GRID TO STORE INFORMATION

### 1) CHILD CENTRED:

When using the grid to store information, using the children's interests can be good starting points. However this does not always work, as this can be too overwhelming for the child. Transport counts (eg how many red cars can we see and record) can be easier to tolerate than whether mum can or cannot ride a bike.

It can be interesting observing how some parents who join in this activity are happy for their children to 'make up' answers eg the baby brother has green hair (rather than, in reality, brown). I have also experienced other parents needing to check veracity (for example '*does Daddy like bananas*') by phoning the other partner at home to check it for the child!

Favourite recording can be What Do We Like To Eat? What Sports Do We Like? What Colour Eyes Do We Have? What Pets Do We Like? etc

And the great thing about the grid recording is that we can record 4 pieces of information if we post models all the way around the grid.

### 2) READING INFORMATION:

Answering questions is a great way to see how well the children have understood the recording system eg ask what child likes green beans, has blue eyes and is 5 years old.

Asking a question can be hard for a child but the grid is a good prompt. So the facilitator may say: 'Ruby ask mum a question with 2 pieces of information'. Abstraction and discussions around the grid work is full of possibilities for extending understanding and language.

## **RESOURCES**

Intersectional Sorting games from simple to mature are beautifully explained and illustrated by Alan Proctor in [Every Child Can Learn](#) (Katrín Stroh, Thelma Robinson, Alan Proctor: Sage 2007) in Chapter 14 pp123-137.

Many of the resources used for the Waldon/Functional Learning approach come from the environment or are made by the facilitators (eg cards). However there are some fantastic cards which we have been able to buy commercially for Intersectional Sorting as a box set with a grid. [What's In The Square? \[Logic and Matrix Games for Children\]](#) and the next level called [What Else Is InThe Square](#) (available in Israel)

The box sets were made for E.J. Arnold & Son Ltd, Leeds (in the 1970's) and manufactured by permission of Tel-Aviv University – Matal by Ahmad Ltd.

Jane Blatt

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## **More Reading:**

*Every Child Can Learn* by Katrin Stroh, Thelma Robinson and Alan Proctor (Sage 2008) is a handbook of Functional Learning, for families and practitioners.

The Waldon Association website ([info@waldonassociation.org.uk](mailto:info@waldonassociation.org.uk)) describes The Waldon Approach, has clips of Dr Geoffrey Waldon at work and makes available on line much of Waldon's unpublished writing. The Association continues to run training workshops in Leeds.

*Autism and Understanding* by Walter Solomon (Sage 2012) is an account of how his son was helped by Dr Waldon. There are also accounts by teachers who use the approach, other parents whose children were helped by Dr Waldon, as well as several young people reflecting on their experience.

[www.autismandunderstanding.com](http://www.autismandunderstanding.com)

Walter Solomon's website.

[www.janeblattatwork](http://www.janeblattatwork)

Describes work by a Functional Learning / Waldon practitioner.

*Developing Play for the Under 3's: The Treasure Basket and Heuristic Play* by Anita Hughes (Routledge 2010) describes the creative and exploratory play of babies and toddlers. It is also an excellent introduction to how to create and use a Treasure Basket.