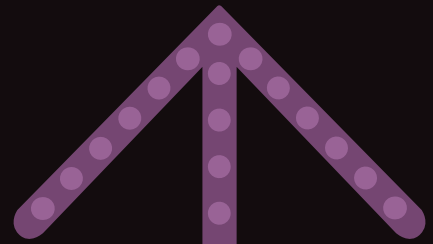


# Visual Merchandising

ART AND SCIENCE



Dr.  
Dennis  
Price





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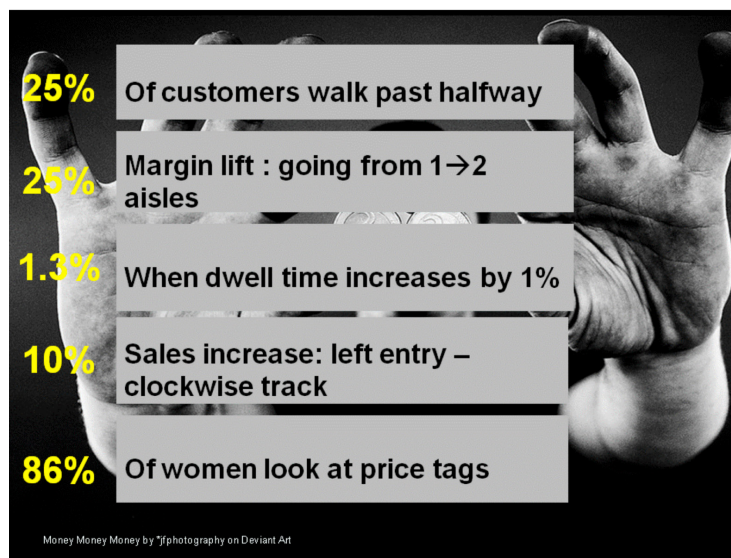
# 1: Introduction

## 1.A: PURPOSE

Store design is a science and an art – and good deal of common sense. Poor design is almost always a result of a designer/owner losing track of one of the basic elements of a retail environment. A store is a place where people shop: everything else is secondary.

As a place of shopping, the layout and design must in the first instance make shopping possible, *then* make it easy and *then* and only then different or interesting or exciting. The basic act of shopping should not be sacrificed on the altar of 'image'. But this is no excuse for drab, functional layouts; it is simply a warning not to too emphasise appearance over substance.

There are two main things you can do to boost sales which are free or nearly free. One is great customer service, and the other is by empowering the greatest silent salesmen of all – visual merchandising. For instance, moving a product from the bottom shelf to the eye-level shelf has proven to increase sales by as much as 87%<sup>1</sup>.



<sup>1</sup> I sometimes remember facts like these but lose the source. Sorry.



## 1.B PRODUCTIVITY

Visual merchandising is essentially about managing three assets:

- **Merchandise (stock)**
- **Space**
- **Fixtures, fittings and equipment**

No business wants unnecessary empty spaces – which costs money to rent – or a lot of 'dead' or duplicate stock – which cost money to buy, or expensive, impractical or unusable fixtures and equipment.

The objective of visual merchandising is therefore MAXIMUM SALES from MINIMUM STOCK and

SPACE. The retailer must achieve the optimum balance between sales and investment in merchandise and space in the shortest possible time. In order to know if these objectives are achieved, the manager can use a number of measures of productivity. Just like a doctor checks heartbeat per minute or cholesterol levels, a retail manager must make certain such checks from time to time.

**Most of these metrics are produced as part of the standard reporting of any POS system, but is important to understand how they are derived.**

### Productivity of Space

The measurement of space productivity is also known as Trading Density, and measured as sales per square metre. The formula is:

$$\frac{\text{Turnover}}{\text{Trading Area}}$$

The formula can be applied to the total store, a product line or a department - as required. Trading area measurement must just correspond with sales (turnover) figure.

#### Example

Total Sales	: \$12 000 000 (Per annum)
Trading Area	: 2 000 m <sup>2</sup>
Trading Density	: \$6 000/m <sup>2</sup>

It does not really matter whether one uses annual or monthly sales figures for the calculations, as long as you do not compare a store using monthly data with one using annual data.

## 1.B PRODUCTIVITY continued

Stockturn is also sometimes referred to as turnover – and strictly speaking it is more correct than using the word 'turnover' to refer to total sales. It is, however, widespread practice, and we shall use the word stockturn to refer to the turnover rate of merchandise. That it is, how many times (per year) a store turns over its stock.

Once again, there are two ways of doing this calculation. The distinction is not between monthly and annual sales, but between retail prices and cost prices. The norm is to use annual data, as monthly data would result in fractions, which are hard to work with and benchmarks have been recorded based on annual numbers anyway.

Either of the following two formulae can be used:

$$\frac{\text{Total Sales}}{\text{Average Inventory at Retail Prices}}$$

$$\frac{\text{Total Cost of Sales}}{\text{Average Inventory at Cost Prices}}$$

Whichever option is chosen usually depends on the individual retailer's information systems. Some retailers even use one method at branch level and another at head office level. The results are, however, exactly the same.

For our purpose, we shall be using the first formula, but it does not really matter either way.

The conceptual formula for stockturn is:

$$\frac{\text{Sales}}{\text{Average inventory}}$$

The concept of average inventory must also be understood. In practice, retailers 'take stock' at least once a year, but sometimes more often. Average inventory<sup>2</sup> (stockholding) would be the average value of the merchandise that the retailer has on hand – expressed in Dollar value.

2 It would be erroneous to take the value of a (random) stocktake at a point in time as the equivalent of your average inventory.

## 1.B PRODUCTIVITY continued

### The formula for average inventory is:

One Stocktake a year:

$$\frac{\text{Opening stock} + \text{Closing stock}}{2}$$

Three Stocktakes a year:

$$\frac{\text{Stocktake 1} + \text{Stocktake 2} + \text{Stocktake 3}}{3}$$

The concept of stockturn is closely related to other techniques of stock planning, such as week's supply method and stock-to-sales ratio.

The weeks' supply method is a simple but laborious method, and is suitable to plan for STAPLE merchandise which has a steady sales pattern.

A retailer will know from past experience how much stock is needed to tide him over between deliveries and this is expressed in terms of week's supply.

Assume that you have 16 weeks' supply and normally carry 20 weeks supply; you would then ensure that enough inventory is ordered to restore the balance to the desired level.

The other method is the stock-to-sales ratio. This ratio is used to make the stockturn figure useful for inventory planning purposes.

Assume that a business has a stockturn of 4 x per annum. Since a year has 12 months (and you are interested in planning monthly stocktaking) the corresponding stock-to-sales ratio is calculated as follows:

$$\frac{12 \text{ months}}{4 \text{ stockturn}} = 3 \text{ stock-to-sales ratio}$$

The same calculation for a stockturn of 6 x, is:

$$\frac{12}{6} = 2 = \text{stock-to-sales ratio}$$

The purpose of determining a stock-to-sales ratio is to help determine the desired B.O.M inventory, given expected monthly sales.

### Assume the following:

Expected Sales		Stock-to-sales Ratio		B.O.M. Inventory
January: \$10 000	x	3	=	\$30 000
February: \$15 000	x	3	=	\$45 000
March: \$20 000	x	3	=	\$60 000

There is a distinct relationship between TOTAL SALES and SIZE of INVENTORY. This makes intuitive sense, because the bigger the store (more stock) the higher the sales. There is that point where an increment in stock is not offset by a corresponding increase in sales. For example, if a store had to double in size, the TOTAL SALES will definitely increase, but it probably will not double in sales. The question that arises is what the optimum stock-to-sales (or stockturn ratio) might be.

This is a crucial point that bears repeating because in our experience most retailers don't instinctively understand this.

**There is a distinct relationship between TOTAL SALES and SIZE of INVENTORY.**



## 1.B PRODUCTIVITY continued

This relationship is, within a certain range also FIXED. That is:

- For a given store
- In a certain location
- Selling a certain range of products
- Assuming effective and stable marketing efforts

**all things being equal...**

**there is a GIVEN amount of sales to be achieved**

AND

**this given amount of sales requires a FIXED ratio of stock to support the level of sales.**

Fortunately you do not have to do it by trial-and-error for every business, as most types of retail businesses have been around long enough to have built up a history of results. So, managers will know from experience, and will be able to verify with industry averages, what the typical stockturn for a specific type of retail business is or should be.

The following table is an example of some of the typical stockturn<sup>3</sup> for various types of retailers.

TYPICAL STOCKTURNS	
Dairies	: 95 x
Butcheries	: 60 x
Newsagents	: 10 x
Chemists	: 7 x
Fashion	: 6 x
Hardware	: 4 x
Jeweller	: 2 x

High or low stockturns also have another implication for retailers:

- The higher your stockturn, the lower the margin can be.
- The lower the stockturn, the higher the margin will probably be.

<sup>3</sup> These numbers have been adapted and 'smoothed' to highlight the differences based on our experience. The actual numbers may vary subject to merchandise assortment carried in that category.



## 1.B PRODUCTIVITY continued

### Rapid Stockturn

ADVANTAGES	DISADVANTAGES
Increases sales because of rapid inflow of new merchandise	Possible out-of-stocks and loss of sales
Allows retailer to leverage purchases by receiving cash and paying suppliers 30-90 days	Higher C-O-S because of lower discounts due to smaller average orders
Reduces expenses such as insurance and rent	Increased expenses such as admin- and handling costs
Reduces possibility of markdowns	
Keeps stock clean and attractive	

As you can see, the advantages far outweigh the disadvantages. Stockturns can be improved in the following ways:

**Sales** ↑   **Sales** →   **Sales** ↑↑   **Sales** ↓  
**Stock** →   **Stock** ↓   **Stock** ↑   **Stock** ↓↓

As can be seen, some strategies require you to reduce your stock. Such a reduction can be achieved by:

- Cut slow moving stock items out completely.
- Reduce variety (range) by emphasizing popular items only.
- Reduce assortment by minimising price, colour, style, fabric and size choices.

### Average Sale

This measure of productivity is probably the easiest and it makes a lot of common sense.

There are only three ways in which you can increase your sales:

- Charge more for the same number of units
- Sell more units by adding customers
- Sell more often to same customers

The average sale is calculated as the total sales divided by number of transactions. It is suggested that more than one measure is used by retail store managers; as each measure emphasizes a different aspect and you cannot get the full picture if only one diagnostic tool is used.



## 1.C OBJECTIVES

As stated earlier, the primary objective of visual merchandising is to generate more sales. This can only be achieved by attaining the following (secondary) objectives. (The 5 A's.) As we later consider various strategies and merchandising principles, these objectives will be borne in mind.

### Accessibility

A display that discourages the customer from shopping from it has very little value. Obstacles must be cleared and the products must be reachable.

Accessibility also relates to the 'shoppability' of a display/ store, especially within the context of people with a variety of disabilities.

### Attention

Displays must get and hold the customer's attention long enough for him/her to make a decision about the product.

### Adjacency

Having a plan and a purpose for which merchandise should go together, goes a long way towards increasing sales.

The golden rule is to present your merchandise the way a customer would use/buy it. Appropriate adjacencies is the silent salesman's way of cross-selling merchandise.

### Anthropometrics

This aspect concerns itself with the physical dimensions of the customer's body. Whether it is child or adult, male or female plays a role when attempting to determine eye-level. Similarly it would be hard to buy (and lift) a 5kg bag of sugar from the top shelf.

### Arrangement

Arrangement refers to things being put in order. This aspect emphasizes that there is a certain element of logic in any display. Products are normally sized from small to large, and tops/shirts are always hung above the trousers.

## 1.D SUMMARY

To set the scene, these first few pages have been devoted to the WHY of visual merchandising. In summary, VM has one purpose alone and that is move stock.

In technical terms this means we should be keenly aware of merchandise productivity (stockturns) and we should measure our success against this metric.

And finally, in order to achieve that overall purpose, there are specific objectives (the 5As) we can set for each individual display. Meeting these objectives will drive the business towards the overall purpose of being a successful (and productive) retailer.



## 2: Concept



### 2.A: COMPONENTS

The first aspect of creating a display is the hardest to explain and probably the hardest to execute. The fact is, all of what follows in this section is simply an attempt to recreate in a logical fashion what is essentially a creative process. With that I mean that all of the following explanation can be obviated by simply having an idea.

However, when you work as part of a team in a structured environment, it is useful to have a framework for discussing and evaluating these creative concepts (ideas) even if the accompanying explanation does not do justice to the process of creative inspiration.

There are three necessary components of the concept that needs to be in place and these three components are universal and as such can be evaluated and systematically considered.

#### Positioning

Every creative concept must resonate with the positioning of the store brand. Positioning is a marketing concept which won't be explored here; suffice to say that ideally all displays should be consistent with the brand story.

To use an extreme example, a store aimed at children and families (e.g. Build-A-Bear) would not (and probably won't) ever build displays which are risqué.

#### Ideas

The central idea for a display is the heart of the creative execution and as such the result of inspiration and is necessarily always subjectively evaluated.

No retailer will always pick the right idea and there is no magic checklist to follow. With experience the ideas will likely get better and the importantly, the better you know your customers and your products, the more likely it is that your ideas will be workable.



#### Stories

The essence of a good idea is one that tells a story. Many people mistakenly believe that to 'theme' a display is the right or indeed the only way to tell a story.

Some stories can be really simple and not every story needs extravagant accessories to create a particular mood.

This image of a paper display in a newsagency tells a strong story about the fun and the variety of papers in store – making a statement that is relevant to any purchaser of art supplies: 'we are in the paper business.'



## 2.B: EXAMPLES

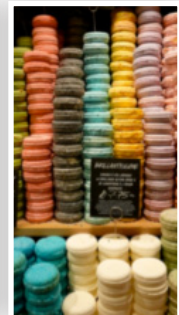
This simple kid's corner tells a story that the store cares about children. It is also an example of how a the store's display goes beyond merchandise itself – but you can easily see how this little corner allows mum or dad to shop in peace for a few minutes.



The novelty entrance of this store is similarly engaging and no doubt tempts kids to enter the store – with mum (or dad) hot on their heels.



Stores like Lush and Body Shop are excellent at telling stories. If you wonder around and Body Shop you will get a very strong sense of the overall brand story (caring about nature caring about people) and it is reflected in the signage, the packaging and every single product display.

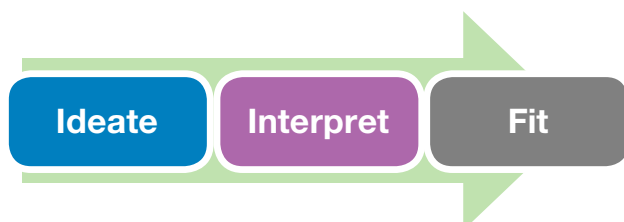


And sometimes retailers try to tell stories (like in this racy Christmas window) which most people won't get, and probably offends most people who value Christmas.



## 2.C: HOW TO DEVELOP A CONCEPT

The process of developing a concept is simple, but creating good ideas is not. 'Ideating' is a whimsical, ephemeral activity. Brainstorming is a technique that may or may not produce a food idea.



The ideas must then be interpreted. That is it must be translated into an actual physical construct that is practical (can be built) and feasible (resources required).

Finally the specific interpretation must be evaluated for its 'fit'. Does it actually meet a customer's need? Is what we are selling a good fit for our business? Does the display fit our brand proposition and positioning? (This is hard to do objectively because people tend to fall in love with their own ideas.)

## 2.D: THE ART OF COMMON SENSE

If this book achieves nothing but gets home the message that visual merchandising is NOT an exact science and that NOBODY has the tight answers all the time – it has succeeded.

Visual Merchandising is a discipline that **demands** much experimentation, and the worst thing a retailer can do is look to and rely solely on experts.

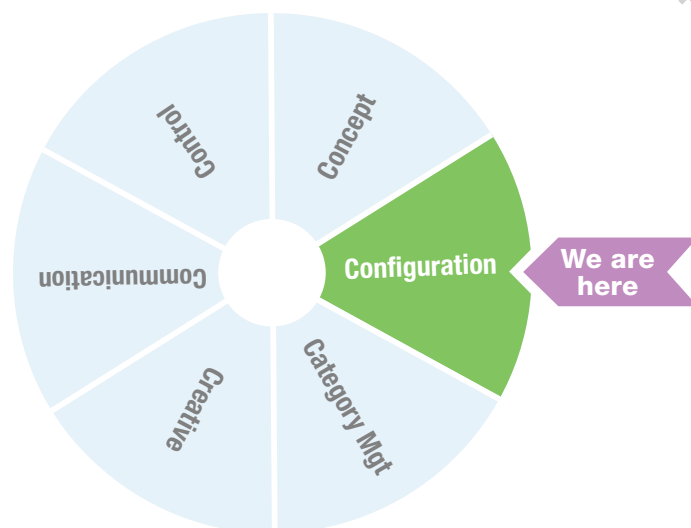
All it takes is common senses, and the litmus test for any display is three simple questions:

- 1. *Is this the right merchandise in the right place?*
- 2. *Does it attract customers' attention?*
- 3. *Does it tell a compelling story?*

Don't be afraid to experiment. Think through what you have created from a practical perspective and consider it from the customer's perspective. Easy. Peasy.



## 3: Configuration



Some aspects of retail are often quite static after the initial floor plate has been configured, so it is important to make an effort to get it right at the outset.

### 3.A: FORMATS

#### Determining Optimum Store Size

The size of the store is obviously fixed – after a lease has been signed – but that does not make it less important. Size is a major factor in determining rent, and rent is one of the biggest fixed expenses a retailer will have. The right size is determined by working backwards from the likely productivity that will be achieved in that space. Sales must be forecasted (allow for some growth) and then base the size requirement on the benchmark productivity.

For example:

.....  
If, forecast sales → \$2,000 000

And, Benchmark Trading Density → \$10,000/m<sup>2</sup>

Required store size → 200m<sup>2</sup>  
.....

Carefully consider any strange shapes that will result in shopping being made inconvenient, as well as impediments like columns, changes in floor heights and even the width of the entrance. Restaurants may be able to accommodate 'interesting' configurations, but a supermarket or toy shop (where trolleys and prams are common) ideally require a flat, rectangular layout. Once the ideal store size is ascertained, this should be weighed up against the commercial realities – including the availability of that space in the desired location.

### 3.A: FORMATS continued

#### Space Allocation

Once the appropriate size is selected, the next decision is how much non-trading space is required vs. trading space. This also differs between different types of retailers, with some requiring very little (5%) and other requiring a great deal (50%) of non-trading space.

In shopping malls it is now common practice to have some storage space off-site because it is so much less expensive than having relatively unproductive space incorporated into the store. This has implications for staffing levels and security, but is nonetheless considered an acceptable trade-off. There is no definitive answer, but the more expensive the space is, the less one can afford to allocate space to non-sales areas. Most speciality stores would allocate approximately 15%-20% to non-sales areas. Most stores of course also have to allocate space to non-selling activities.

*There are four strategies a retailer can follow to accommodate the non-selling areas.*

1. **Sandwich approach** is used in a multi-level store where one of the middle floors is allocated to non-selling activities.
2. **Core approach** assigns the centre of the store to non-selling activities.
3. **Peripheral approach** assigns the perimeters (along the sides) to non-selling activities.
4. **Annex approach** assigns an add-on (appendage) to the main bulk of the selling area.

*Non-selling areas include:*

- Cash desk
- Other customer service areas
- Dressing room (cubicles)
- Ablution facilities
- Stock room
- Offices
- Staff rooms

Without doubt, the most common design/configuration error made by specialty stores is the location of the cash desk. Again there is a fallacious assumption that the best location for the cash desk is near the entrance where it is easy to keep an eye on the comings and goings of all customers for 'security' reasons. The truth is that the front of the store is your most productive sales area, so locating the cash desk there could easily diminish sales by 10%- 20%.

Furthermore, research has shown that only about 20% of shrinkage is directly attributable to customers who shoplift. (The rest is due to employee theft, collusion between employees and outsiders and administrative errors.) Even assuming an incidence of 5% stock loss due to shrinkage, this means only 1% in real terms is a result of customer theft. The loss in sales (20%) far outweighs the shrinkage factor.

The astute use of modern technology can further minimise customer theft, so it makes little sense to sacrifice your most productive trading area for the sake of 'security'. The right place to put the POS is where the customer would expect it – at the end of the customer journey, and in the least productive part of that particular zone.



### 3.A: FORMATS continued

#### Example

Consider a store that has GLA of 500m<sup>2</sup>.

The Net Allocatable Space may be 300m<sup>2</sup>.

(To account for walkways/aisles and non-retail space.)

Space allocation decisions are made based on the principles that the amount of floor space is proportionate to the % contribution to the profitability of the store.

**Space Allocation Table**

1	2	3	4	5	6
	<b>GM%</b>	Sales	GM\$	% Dollars contributed	Net Floor Space =
Category 1	30%	\$ 1,000,000	\$ 300,000	44%	132m <sup>2</sup>
Category 2	25%	\$ 500,000	\$ 125,000	19%	57m <sup>2</sup>
Category 3	50%	\$ 500,000	\$ 250,000	37%	111m <sup>2</sup>
	<b>Sales</b>	<b>\$ 2,000,000</b>	<b>\$ 675,000</b>	<b>100%</b>	<b>300m<sup>2</sup></b>

*Column 1: Category (e.g. Shoes, Skates) is a given.*

*Column 2: Net Sales per category is taken from the POS.*

*Column 3: GM% of that category is a calculation ( $GP \div \text{Net Sales}$ ).*

*Column 4: GM\$ of the category = how much GM does that category contribute at that sales level.*

*Column 5: What ratio is the Gross Margin contribution of each category?*

*Column 6: Apply the contribution ratio to available floor space (NAFS) to determine space allocation.*

In column 6 the retailer has now established how much space should be allocated to each category. It must be stressed again that such an exercise is not purely a numerical.

Some categories require physical representation beyond their actual contribution simply because it is a category that makes a statement about the retail offer, or some categories (e.g. jewellery) may have such high value that it possibly requires significantly less space than its gross margin dollar contribution. Store design and layout also plays an important role, as well as the decision about adjacencies.



### 3.A: FORMATS continued

The final step is to compare the theoretical allocation (calculated previously) with the actual allocation and to make an executive decision about an appropriate response to any discrepancy. The actual allocation is a simple physical measurement of the actual amount of space currently allocated to the category.

#### Example

	THEORETICAL ALLOCATION	ACTUAL ALLOCATION	FINAL ALLOCATION
Category 1	44%	40%	?
Category 2	19%	25%	?
Category 3	37%	35%	?

The next decision is the allocation of departments/ merchandise categories to across the sales floor. This is not a simple linear decision. The retailer cannot simply allocate more space to the biggest selling merchandise category. A specific retail format will dictate that certain lines must be carried, even though it is a relatively slow seller. Logic dictates that if you constantly cull the lowest selling category from the sales floor, you will pretty soon be left with only one category. (This will turn your department store into a shoe store quick smart.)

A simple way of assessing adjacencies is to map all categories on a simple table according to the sequence in which the typical shopper would experience the shopping trip. This is done by listing each department in a logical order down a list, and then simply to cluster any 3 successive categories together to evaluate whether a category is appropriately complemented by the preceding and following category.

### 3.A: FORMATS continued

Does the merchandise category just before and just after (i.e. maybe just to the left or just to the right) make sense as a shopping experience for the typical customer? In the example below:

- Is the sequence/ adjacency of categories 1-2 [Shoes/ Swimwear] sensible?
- Is the sequence/ adjacency of categories 2-3 [Swimwear/Socks] sensible?

#### Example

Evaluate in sequence of categories (as experienced by the shopper) and evaluate whether it is a sensible adjacency. Depending on the design of the store you may need to evaluate more than 2 categories simultaneously.

1. Shoes (M)
2. Swimwear
3. Socks/Hosiery
4. Bags
5. Jewellery
6. Surfboards
7. Skateboards
8. Shoes (F)
9. T-shirts
10. Streetwear (M)
11. Streetwear(F)
12. Boardshorts

Can you improve the adjacencies?

The general rule of thumb is to expose the customer to the product category in the order in which they would buy it: first the pants, then → belts, first the dress then → handbag.

The next space allocation decision is the LOCATION of the various departments/ categories on the floor plate. It is completely wrong to locate your best sellers far away from the entrance under the fallacious assumption that you should use the best seller category as your 'magnet' to draw customers into the store.

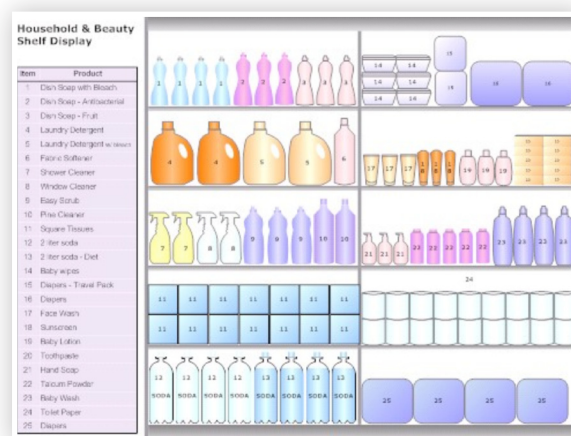
The requirements of your retail format should dictate the minimum stock levels per category, but that leaves plenty of room to apply category

management principles and some retail science to be applied. (That will be addressed in a following section.)

Many people assume that supermarkets put the bread and the milk near the back of the store to 'pull' customers through the store. The reality is that the deli/ bakery areas of the supermarket require large service areas immediately adjacent, and supermarkets have to design these departments on the periphery of the store (with easy access to loading docks.)

### 3.A: FORMATS continued

In the following paragraphs reference will be made to display tactics and principles. But the number one, fundamental principle or objective is obviously that goods must be displayed in such a manner that it maximises sales. Like all other spheres of business, the computer has also made a big impact on the way merchandise is displayed. This is particularly true in the supermarket industry, where planograms are becoming popular.



SOURCE: dmsretail.com

### 3.B: FLOW

Good design will ensure the store is configured to capitalise on the natural patterns of shopping and browsing. For this type of research one can usually find studies that have drawn the exact opposite conclusions, but some of the findings that are congruent with our experience are:

- The tendency of shoppers (in Australia) to traverse a store in a clockwise pattern.
- Males and females adopt (traditional, even primeval) roles of hunter and gatherer.
- Males shop for shorter periods of time than females.

Some may argue that these findings are dated and not applicable in the modern age. In our view, disregarding these observations represents politically correct wishful thinking.

Nevertheless, the main lesson here is that the retail store owner should think about the configuration of the store within the context of how the customers will likely be using the space. With clever use of flexible fixturing, one can adapt and respond to changes as required.

### 3.A: FLOW continued

#### 3.B (i) Storefronts

This aspect of store design is often dictated by the general architecture of a building, or in regional centres, by fairly strict criteria laid down by Centre Management. There are three fairly common types of fronts. Viewed in plan they would look as follows:

**The straight front**



**The angled front**



**The arcade front**



Many specialty store have (virtually no) storefront, but is rather simply an 'entrance.

## 3.A: FLOW continued

### 3.B (ii) Entrances

In some cases (e.g. supermarkets) the store front is the entrance and there are no windows to speak of. An entrance is an important aspect of store design and the primary rule is that entrance should be inviting and not present a barrier to a prospective customer. This is achieved by:

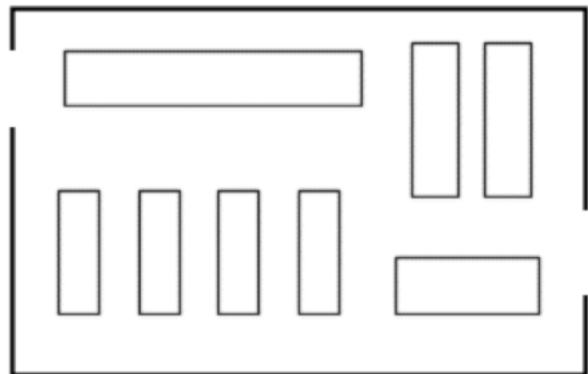
- Ensuring steps are not placed at the entrance.
- Good lighting.
- Sufficient width for easy passage.
- No merchandise/fixtures to clutter entrance.
- Easy access for pregnant/handicapped persons or those with trolleys where appropriate.

Because the front of the store is the most productive, many retailers crowd this area (or trade out of the store – beyond the lease line) or use to display specials all the time. This results in the creation of 'discount' image which may not be the desirable outcome in the long run.

### 3.B (iii) Traffic-flow patterns

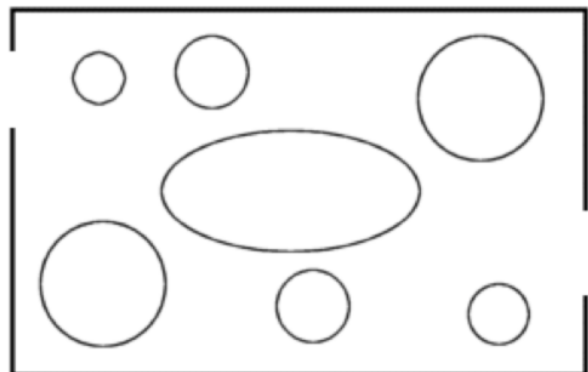
#### Straight (gridiron) traffic flow pattern

- Straight (gridiron) traffic flow. (Food retailers, hardware and discount stores.)
- An efficient atmosphere.
- More floor space is devoted to product displays.
- People can shop quickly, and customers enjoy clearly marked and distinct aisles.
- The customer develops a routine – a way of walking through the store.
- Self-service is easy, reducing labour cost.



#### Curving (free-flowing) pattern

- Boutiques and department stores – i.e. David Jones
- This pattern creates a friendly atmosphere.
- Shoppers do not feel rushed and will browse.
- People are encouraged to walk around in the store.
- Customers can choose their own pattern of shopping.
- Impulse and unplanned purchase are enhanced.



### 3.C: ZONES

The following information could serve as a guideline when allocating space<sup>4</sup>. The percentages indicate the percentage of sales typically generated in that part of the store. The basic rule of thumb is that your most profitable stock should be located in the area likely to generate the most 'turn'.

#### Multi-Level Stores

The distribution of sales across the various levels of a multilevel store is as per the table below.

In essence, people prefer to go up one level rather than down level (in a multi-level) store by a factor of 2:1.

LEVEL	% OF SALES
3rd floor	15%
2nd floor	30%
Ground floor	40%
Basement	15%

#### Standard Stores

The design of a store has the single objective of maximising sales. In order to achieve that objective, a well-designed store will meet a number of criteria:

- Functional and practical
- Aesthetically pleasing décor which improves morale of staff
- Meets the needs/requirements/expectations of the target market
- Cost-effective
- Complements the merchandise
- Supports the store's strategic direction
- Minimises shrinkage and opportunities for theft
- Avoids the 'sameness syndrome' by retaining a unique image.

Entrance		
16%	18%	18%
10%	10%	12%
5%	6%	5%

<sup>4</sup> Again, these numbers have been amended and smoothed from the original source documents to reflect a wider range of stores. It is by no means accurate and is used only to illustrate the general principle that the 'value' of productivity of retail space generally, progressively diminishes towards the rear of the store.



### 3.C: ZONES continued

#### 3.C (i) Exteriors

Store design begins before the customer enters the store. And what the store looks like before the customer enters it is crucial to the performance of the store.

The image to the right is of a newsagent in FNQ (AU).



Note the following:

- Flexible fixtures (outside the lease area)
- Clear, simple sign/ name/logo
- Ceiling treatments that draw the eye in
- Ability to see through the store right to the back
- Lack of clutter = good landing zone for customers
- Legible, simple signage (e.g. 'new fiction') AND it is the right type of merchandise for this particular zone
- Graphic treatments of back wall
- Rhythm & harmony in the merchandise (stacks of books) to make a strong statement.
- Textures & floor covering
- Effective (bright) lighting without creating a 'warehouse' look
- Graduating heights: low in the front of the store to high at the back.

### 3.C: ZONES continued

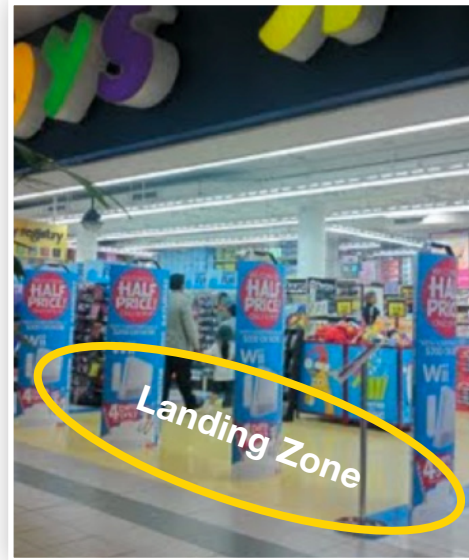
#### 3.C (ii) Landing Zone

The landing zone (or 'decompression zone') is that area immediately inside the entrance of the store. Its size may vary from several square meters in department stores, to something much smaller (almost non-existent) for some specialty stores.

Window displays must have sufficient 'wow' factor to stop passerby in their tracks. Once you have grabbed their attention and they decide to enter the store, they must undergo a physical and psychological transformation. (Watch carefully and you will see how they slow down, fold away the umbrella, pat their pockets, settle the child, adapt to the lighting etc.)

It feels counter-intuitive to leave some of your (potentially) most productive space empty but one should view it as an investment in space required for customers to mentally and psychologically transition from passerby to browser. This transition is necessary in most stores before you can convert browsers into buyers.

If you are going to break the landing zone rule, then break it properly (wow like a window display) in order to (figuratively speaking) punch the customer between the eyes. If you are going to do this, then do it infrequently in order to retain the 'surprise' element.



Orig Photo: [shoppologist.blogspot.com](http://shoppologist.blogspot.com)



#### 3.C (iii) Gold Zone

This is the primary retailing zone – the most productive space that must be managed accordingly.

Types of products to display:

- Core merchandise  
(signature lines, higher margins)
- Introduction of new lines
- Major promotions
- Price Leader
- Brand Leader

Best practice merchandising:

- Change weekly
- WOW creative impact
- Strong Signage

## 3.C: ZONES continued

### 3.C (iv) Silver Zone

This is the **secondary** retailing zone that must be managed accordingly.

Types of products to display:

- Secondary merchandise (A and B lines)
- Support stock introduction of new lines.

Best practice merchandising:

- Clear sightlines from front of store
- Change fortnightly/monthly.

### 3.C (v) Bronze Zone

This is the **tertiary** retailing zone – the least productive space that must be managed accordingly.

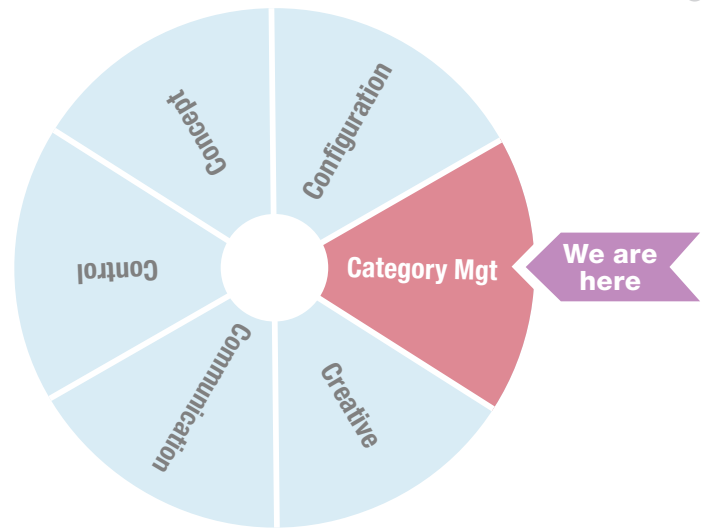
Types of products to display:

- Bulk of stock
- Staples
- Lower margin
- Comparison

Best practice merchandising:

- Change quarterly (refresh)
- Priority is housekeeping & ease of shopping  
(*not* wow!)

## 4: Category Management



Is the product bought by brand, price, benefit or function (size or by style)? This is one of the first questions a retailer should answer: How do people buy my product? (In fact, top notch marketers argue that this is a more important question than 'who' is buying your product.)

And the answer to this question determines how you would like them sold and merchandised. This then determines in what order you do the major and minor category management, your 'planogramming' and even ticketing.

### 4.A: RANGE & ASSORTMENT

The less experienced retailers often fall victim to the sales efforts of representatives. They rely on manufacturers' reps to not only sell, but also merchandise whole categories of the store. Invariably the retailer ends up being overstocked and with unbalanced categories.

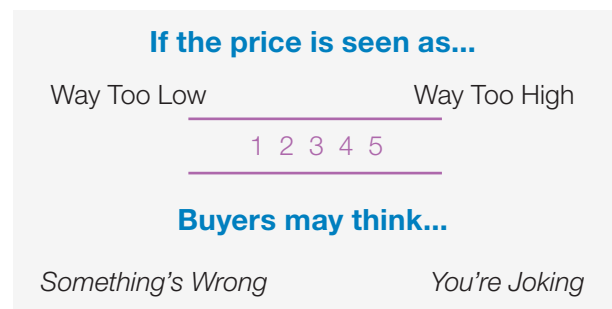
### 4.B: PRICING

The pricing of products plays an important role in the creating of an image of a business. The retailer can use different strategies to establish the prices of their products or services. At a macro level, the retailer must select from one of these three generic strategies:

- ABOVE the market
- AT the market
- BELOW the market

The notion of 'price' is used by the customer as a shortcut for quality.

Buyers generally see price on a sliding scale, like this:



Prices can really be 'too good to be true'.

## 4.C: SHELF SPACE MANAGEMENT

Dunne et al (1992: 417) defines a planogram as "individualised computer-generated plans to maximise the use of shelf space by showing which products (and what quantities of these products) should be displayed". This definition is quite acceptable, but the author will prefer to use the word 'optimise' instead of 'maximise'. Planograms are then just a visual merchandising plan generated by the computer. The scope of a planogram can be an entire store, a department or just a product range on a shelf or gondola<sup>5</sup>. The most common application is to use a planogram to plan the product display for a department.

**A - Shelf** = High Value

**B - Shelf** = Optimum Value (eye-level)

**C - Shelf** = Medium Value

**D - Shelf** = Low Value

**E - Shelf** = Lowest Value

A planogram calculates the number of 'facings' a particular product should have. Products on the supermarket shelf are displayed in such a way that they 'face' the customer. The number of units of a particular product (say Nescafé 100 gram bottles) is referred to as facings. Behind the front row is the back-up stock and depending on the actual dimensions of a particular product that may vary.

The optimum number of facings is subject to debate, but every manufacturer obviously tries to secure the maximum number of facings. Received wisdom would have it that a product should have  $\pm 7$  facings to make any kind of impact. This would obviously vary from product to product and brand to brand. During a sales promotion, a manufacturer would obviously also negotiate for more facings.



The term 'facings' is also quite appropriate, as a product should never be displayed in such a manner that the consumer has to touch/move it in order to see the brand or flavour. That is, it should be displayed 'face-on', with the name etc. clearly visible.

All facings should be uniformly displayed; otherwise most of its impact would be lost. The exception would be when displaying a product with a side view. This could be used with products such as steam irons, where a side view is used to:

- show a unique feature
- to create interest
- fill up space that would otherwise be empty.

For products like coffee/shampoo/deodorants and so forth, there would not be much use in employing side views.

5 A gondola is the commonest shelving unit used in the supermarket industry. It is approximately 1.9 metres high and normally consists of 5 shelves which are  $\pm 35$  cm apart, with bottom about 15 cm from the floor.



## 4.D: DISPLAY CONFIGURATIONS

### An Assortment Display

Retailers (e.g. supermarkets) use this type of display to exhibit a wide range of merchandise. The customers are encouraged to “interact” with the products in an open assortment display.

With a closed assortment display the customers are encouraged to look at the display (jewellery) but the staff usually have to unlock the display cabinet for the customer to touch it.



### An Ensemble Display

This type of display consists of merchandise from separate categories in one display. The products complement each other. Customers enjoy the ease of purchasing an entire ensemble.



## 4.D: DISPLAY CONFIGURATIONS continued

### A Rack Display

The primary function of a rack display is to present the products. It is a high maintenance display because customers put the products in the wrong place.

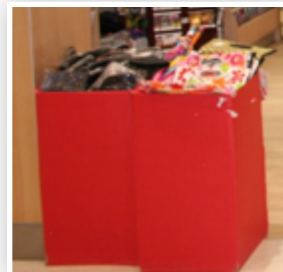


### A Cut Case

The merchandise is displayed in its original boxes. It projects a "cheaper image". (E.g. Aldi Supermarkets.)

### Dump Bins

A dump bin is a box or case that holds sale merchandise, and is an inexpensive display option and also projects a 'cheap' image but may lure customers into the store. The location of the bin is important as well as the type of products inside the bin.





## 5: Creative



### A day in the life of a store designer. Extracted from *Debi Ward Kennedy's* blog

Using the principle of Zone Design, the space was divided into functional areas containing products of like purpose/use. By taking an inventory of the lines carried and placing them in categories (Wine, Kitchen/Cooking, Tabletop, and Outdoors/Home Décor/Entertaining), I was able to determine how big each Zone would need to be to hold them all, and where each Zone would be located within the space.

I moved on to determine what fixtures worked together (same finishes, similar structure, etc.) and what product would show best on those fixtures. My goal is to coordinate the style of the fixtures with the style of the product - for example, a formal dark wood shelf unit with glass shelves holds crystal vases & glasses, while a

rustic pine hutch & table displays handpainted pottery. The fixture isn't so incongruent that it calls attention to itself - it lets the products take center stage. In some cases, manufacturers provided fixtures specific to their products, and I left those as they were.

Each Zone was plotted, fitting fixtures into the space to allow for adequate walkways and to keep sightlines clear, so that certain areas can be made to POP with large colorful displays to draw you through the space. Placing season-specific merchandise in one area in each Zone keeps things looking fresh and exciting, and allows for flexibility in resetting displays each season without having to move everything in the space.

## 5.A: STRATEGIES

Most retailers can use the following merchandising strategies and they need not follow only one. In fact, many retailers will use many of these strategies simultaneously.

### Homogenous Merchandising

This is a strategy that is used in a retail environment where there is a high degree of product specialisation – that is speciality stores. It is the opposite of standard, heterogeneous merchandising approach.



### Themed Merchandising

The use of themes (Disneyland/On the Farm) as a unifying factor, either on a storewide basis or only a department – or product range basis. Fashion stores are particularly fond of their 'stories' and often create theme displays such as Hawaiian or Nautical.



### Lifestyle Displays

This is also a themed display, but it does not tell a story for the sake of a story, but rather to fit and compliment the customer's lifestyle. Typical lifestyles are identified in the field of Consumer Behaviour, and could be for instance; Yuppies, Greens or Health Nuts – all of which are distinct customer groups that could be targeted by the retailer.



## 5.A: STRATEGIES continued

### Vertical Merchandising

This is the strategy of emphasizing variety of product ranges by putting all product ranges next to each other and using the depth (vertically) to put back-up stock of the same variety on the shelf. Many retail managers under-estimate the contribution of vertical merchandising, which is the underlying construct of planograms.



Variety refers to the number of product lines carried (tea, coffee, etc.); and assortment refers to the depth of these line (brands, sizes, styles, etc.). Vertical merchandising is the strategy of displaying the variety of merchandise lines (width) next to each other, (horizontally) and to display the depth or range vertically - under each category. Refer back to the diagram to see what is meant by the above explanation. Vertical merchandising capitalises on the fact that shoppers scan the aisles from left to right – usually at eye level – until they see the product line (e.g. coffee) they want. They would then scan the shelves above and below for their favourite brand/preferred size etc.





## 5.A: STRATEGIES continued

### Warehouse Display

This strategy requires virtually all stock to be on the sales floor – stacked to the ceiling and with industrial-type shelving. (E.g. Bunnings.)



### Scrambled Merchandising

This strategy emphasizes the cross merchandising of product ranges that do not – at first glance – belong together. Most newsagents adopt a strategy of selling confectionery alongside books and magazines.



### Minimalist

This merchandising strategy is especially suited for stores that are attempting to portray an exclusive image. A boutique with shiny marble floors, two statues, a painting and five dresses against the one wall, would be following a minimalist strategy.



### Standard or Classic Merchandising

The standard merchandising strategy makes use of the maximum merchandise on the traditional shelving and rails – displayed in the conventional manner. This strategy is usually applied in larger stores' bulk-of-stock areas and specialists strategies will be followed for feature displays.



## 5.B: ELEMENTS

### Lines

Lines are combined to form shapes and shapes are effective in drawing customer's attention.

The variables of lines are:

- Fat vs. Thin
- Short vs. Long
- Straight vs. Curved
- Sharp vs. Fuzzy

The line is determined by the physical dimensions of the merchandise, individually or the way in which it is 'lined-up'.

- Straight lines denote order, precision, and rigidity.
- Horizontal straight lines denote calm and restfulness.
- Curved lines denote flexibility, action and femininity.

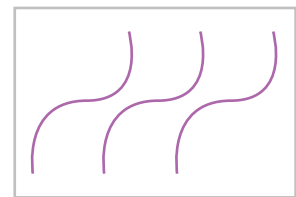
Lines are used to organise by:

- frames/ borders
- delineation
- emphasis

Lines are used to reflect a mood/emotion.



McRay Nagleby



## 5.B: ELEMENTS continued

### Colour

The use of colour is an important and powerful aspect of display. Colours are interpreted differently by most people. Findings often vary from project to project and one can't read too much into it other than treating it as a general guideline.

COLOUR <sup>6</sup>	PERSONALITY LINK	MARKETING INSIGHT
<b>BLUE</b>	Respect, Authority	Coffee in blue can = mild IBM Associated with club soda Men prefer blue packaging Blue houses avoided
<b>YELLOW</b>	Caution, Novelty, Temporary, Warmth	Registered quickest by eyes Stops traffic and sells a house Coffee in yellow tastes weak
<b>GREEN</b>	Secure, natural, Relaxed	Green = sugar-free Vegetables & Gum Good work environment
<b>RED</b>	Human, Hot, Exciting, Strong, Passion, Impulsive, Aggressive	Makes food smell better Coffee= rich Men prefer yellowish red Women prefer bluish red Coca Cola
<b>ORANGE</b>	Powerful, Affordable, Informal	Draws attention quickly
<b>BROWN</b>	Relaxed, Masculine, Nature, Steady, Reliable	Coffee in dark brown = too strong Men seek brown packaging
<b>WHITE</b>	Goodness, Purity, Chastity, Clean, Delicate, Refined	Suggests reduced calories Pure and wholesome food Clean, feminine
<b>BLACK</b>	Sophistication, Power, Authority, Mystery	Powerful clothing Hi-tech electronics
<b>SILVER/GOLD/PLATINUM</b>	Regal, Wealth, Status	Premium price

<sup>6</sup> Original reference lost – happy to acknowledge if advised.

## 5.B: ELEMENTS continued

Most retailers use a little hand-held card (which contains most colours) to determine colour progression. The card is often shaped like a wheel. A common colour progression for a fashion store would be:



White → Beige → Light Green → Dark Green → Blue → Purple → Black.

That is, generally colours run from light to dark; and when merchandising, say a sleeve-out section of blouses of various colours, then the colour progression as adopted by that particular store will be followed. (First the white blouses, then the beige ones, and so forth).



*Example of white beige light green*



## 5.B: ELEMENTS continued

### Texture

The 'feel' of a product's surface is only one dimension of fixture. Through clever use of background material, lighting and contrast, a merchandiser can create or enhance a perceived texture in an artificial manner.

### Sound

If music is used, its effect must be carefully considered. The usefulness of playing Jingle Bells at Christmas time is not certain. The tempo of music (fast or slow) does have an influence on the speed at which the customer shops, although not to the extent one might expect. The majority of retailers do not commonly use it in any case. (An exception is restaurants). Music is not the only form of sound and the sound of 'bells & whistles' to attract attention is also quite successful.

### Aroma

The smell of freshly baked bread and freshly brewed coffee is sure-fire way of attracting attention of shoppers. Unfortunately the reverse is also true. Unpleasant odours are an effective deterrent to shoppers, and will certainly shorten their stay.

### Lighting

Lighting not only creates atmosphere, it also assists the retailer with minimising theft in the store.

- Illuminate merchandise from the angle a customer will see it - usually front-on.
- Use baffles to direct lighting at merchandise - and not the customers.
- Focussed (spot) lights should never be aimed at the floor. In stores such as supermarkets, general fluorescent lights will shine on floors as well.

- Be careful not to create glare - such as on jewellery showcases and deli-counters.
- Conceal source lamps (use alcoves etc.) to make general lighting invisible.
- Be aware of how type of (fluorescent) light influences the colour of merchandise.
- Use lighting to focus the consumer's eye on product features.

Examples of stimuli in the retail environment include products, packages, brands names and merchandising displays. Human beings use sensory receptors (eyes, ears, nose, mouth and skin) to receive the sensory input. Customers use the sensory function (see, hear, smell, taste and feel), either singly or in combination, in the evaluation and use of most of consumer products. Retailers must ensure that they appeal to the desired senses in such a way that is compatible with the need and the wants of the target market.

## 5.C: PRINCIPLES

Each of the following merchandise principles would fit into at least **one** of the categories (5 A's) identified earlier. They are, however, discussed in no particular sequence. Thus far we have identified the **elements** with which a merchandiser works, and then the **objectives/aims** of the merchandiser. This paragraph will attempt to identify how these elements are used to achieve those objectives.

### Contrast

By contrasting elements (shapes/colours) attention can be drawn to merchandise – or certain aspects of merchandise.

### Repetition

Repetition draws attention **and** creates order. It helps make an impact by increasing the 'presence' of a product.

### Harmony

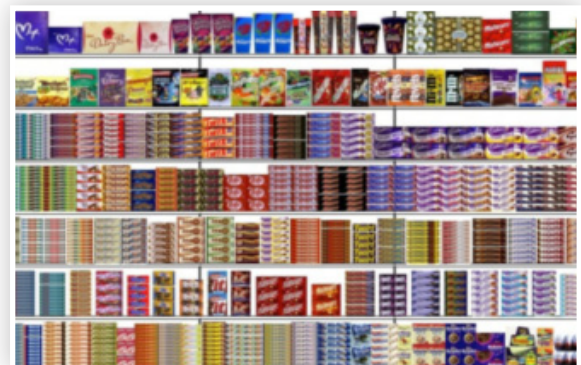
Harmony is about using all the elements, the merchandiser **and** the fixtures to create an aesthetically pleasing environment.

### Rhythm

Rhythm is used to keep the attention (especially **visual** attention) in an unobtrusive way to guide the eye through the entire display.

### Proportion

Proportion is utilised by highlighting relative differences in size – usually by graduating the merchandise from small to large – or on steps to a focal point.



*This display captures all the principles discussed here. See if you can spot it.*

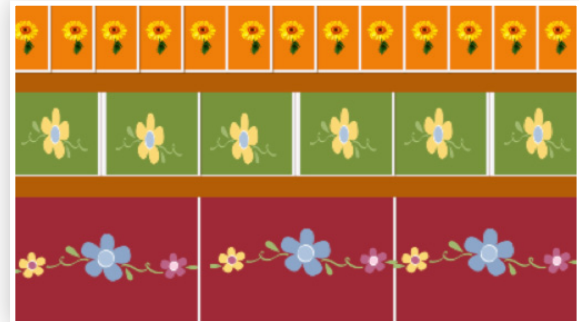


*Photo Credit: shoppologist.blogspot.com*

## 5.C: PRINCIPLES continued

### Blocking

Or grouping of items – especially colour blocking – is an effective way of emphasizing merchandise. It is based on the principles of contrast **and** repetition.



### Focus

This is probably the most fundamental principle of visual merchandising. Most displays attempt to create a focal point. This can be done through arrangement of merchandise (pyramids, zigzag, step-up) or even through astute lighting. A good way to observe how focal points are applied, would be to look at the wall displays in fashion stores. Often a particular display (story) has a triangular shape with the apex at the top. Even the arms of clothing rails will be stepped in a gradient from lowest at the aisle.



## 5.C: PRINCIPLES continued

### Balance

- Balance can create mood (order vs. chaos)
- Symmetry and Asymmetry are the two types of balance.
- Perfect balance conveys one thing, but an unbalanced design enables you emphasize one aspect or draw attention to another in a way that symmetry can't.
- Asymmetrical design can still achieve balance because of the position and weight of the elements.

**Symmetrical Balance** is an even placement of visual weight in the design.



**Asymmetrical Balance** creates uneven spaces, a sense of imbalance making tension and a dynamic suggestion of visual movement. Asymmetrical balance refers to a psychological or "felt" balance. Space and shape don't need to be evenly dispersed on the page to be 'balanced'.



Why is important? People like balance; we are creatures of symmetry and appreciate it in everything. A design is like a real world building: it needs to be balanced or it doesn't work.

## 6: Communication



### 6.A: PACKAGING & LABELLING

Product packaging is useful as display props – and also places some constraints on the physical possibilities of display. (E.g. square packaging is easier to stack in a variety of shapes.)

The package also dictates the style and quantity of product that must and can be displayed:

- enough to make a strong statement or tell a story
- not so much that it will collapse the display

The bigger the packaging, the fewer units can be displayed.

Packaging may be integral (and inseparable) to the product (most FMCG<sup>7</sup>) or it can be quite incidental (e.g. brown goods).

Packaging usually is also a vehicle to carry the brand(mark) of the product and displays should be sensitive to this. A very basic principle is to ensure that the 'facing' faces the consumer.

Labels carry important product information, some of which may be a legal requirement.

Many consumers are beginning to make a greater interest in aspects such as:

- country of origin,
- manufacturing methods, and
- nutritional content

This information can be amplified very successfully in POP<sup>8</sup> collateral to enhance the 'shoppermarketing' potential of the product.

Packaging and label content can provide inspiration for display opportunities AND should be considered from a colour scheme perspective as and when applicable.

<sup>7</sup> Fast Moving Consumer Goods

<sup>8</sup> Point-Of-Purchase

## 6.B: SIGNAGE & POS COLLATERAL

The study of signs and symbols is technically referred to as semiotics.

A store sign serves the purposes of attracting the customer's attention, identifying the store, and advertising. The criteria for good signage are that it creates awareness and interest, is inviting and distinctive.

A sign usually incorporates the name of a store as well as a logo. In a country with a high percentage of illiterate people, or in countries with a diverse population where there are multiple languages spoken, logo types probably play a greater role in store identification than we probably expect.

The criteria for good signage are:

- create awareness and interest
- must be inviting
- must be distinctive.

Signs are occasionally also used to denote:

- hours of business
- slogan
- location
- type of store.



*Of course the whole industry was in uproar when this image of a 'sign' emerged on the internet.*



## 7: Control



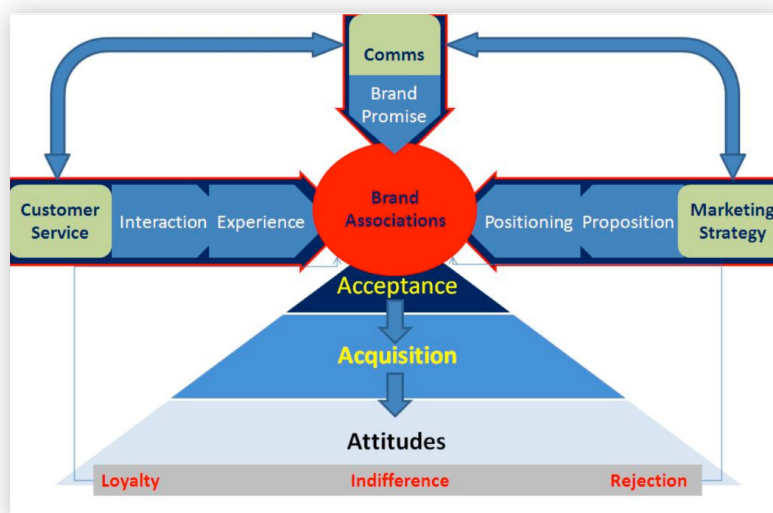
### 7.A: QUALITATIVE

The two qualitative metrics that are of critical importance are the brand (awareness, loyalty) and the customer's experience (satisfaction, loyalty).

#### 7.A (i) The Brand

This diagram depicts a number of dimension or components of retail marketing strategy. It is too complex for complete discussion at this stage and is included for the super-keen readers to consider and evaluate.

In essence the diagram illustrates that there are many influences that ultimately create the brand (and all its associations) and these activities are integrated.



The purpose of creating a brand is to give the customer a shortcut (decision heuristic) when making their purchases.

The degree to which we have succeeded is measured in the degree of customer loyalty.

Should you accept the thesis of this diagram, it then stands to reason that visual merchandising should be considered and managed within the context of ALL ACTIVITIES that create brand associations. That is, it must:

- Support customer service
- Communicate your positioning
- Deliver on your brand promise



## 7.A: QUALITATIVE continued

### 7.A (ii) The Customer Experience

We have previously stated that merchandise should be displayed the way a customer shops. In fact, it has been observed that people buy so that they can shop, and not shop so that they can buy.

There is a great deal of truth in that statement. The hedonistic (social and emotional dimensions) of the shopping experience is paramount in most retail categories.

Even supermarkets place their fresh food departments (illogically) at the store entrance when it would make more sense to shop for fresh food towards the end of the shopping trip. But fresh food creates a pleasant shopping experience at the outset and re-frames all subsequent purchases.

## 7.B: QUANTITATIVE

At the outset the importance of productivity measures was highlighted. There are any number of combinations of metrics that will guide the retailer's decision-making regarding the merchandising process.

In our humble opinion, the three key metrics are as below. The main thing is that it utilises the 'gross margin' instead of sales, and then the three elected denominators are actually simply the three biggest costs for any retail business (rent, wages and stock).

### GMROS

Gross Margin Return on Space (variation on trading density).

### GMROL

Gross Margin Return on Labour.

### GMROI

Gross Margin Return on Inventory (investment).

## 8: Conclusion



The above diagram was used to guide the exposition of the various topics related to visual merchandising in the retail environment.

It is easy to ignore because it was ubiquitously used in this eBook; but it is nevertheless an important part of our understanding of the topic.

The 6 Cs are not only easy to remember, but it does represent a complete framework for understanding this topic.

It is also important to consider the sequence of the topics. Note for instance that 'creativity' is not something to be considered up front, but rather follows several other topics and considerations.

This framework is also a holistic view of the topic, and all aspects are important (possibly even equally important) in our consideration of a visual merchandising approach. Although we may debate the relative importance of each section, it is absolutely clear that the absence of one of these links in the chain will undermine the efficacy of your merchandising.

If this eBook achieves nothing but encourages a few people to 'have a go' by letting go of their fears that there are 'secrets' – I will be happy. Visual Merchandising is an experimental activity – and that means there is rarely one right way. Or to phrase that differently, for every rule there is probably an example of how that rule was broke to great effect.



**Don't be afraid to experiment.**



**Use the team as inspiration and use  
their skills to merchandising the store.**



**And possibly, most importantly,  
have fun doing it!**

**Dr Dennis Price**

Klarna, NSW

## 9: Exercises

Do the necessary calculations to fill in the blank spaces in the following tables. (The tables are independent from each other).

TABLE A

STOCKTURNS		
ANNUAL SALES	AVERAGE INVENTORY	STOCKTURN
(a)	1 000 000	1.2
2 400 000	(b)	1.5
3 000 000	300 000	(c)
600	(d)	12
(e)	200	30
16 000	(f)	20
20 000	5 000	(g)
(h)	5 000 000	2
20 000 000	4 000 000	(i)

TABLE B

STOCK-TO-SALES RATIOS			
MONTHLY SALES	STOCKTURN	STOCK-TO-SALES RATIOS	B.O.M INVENTORY
(a)	1.5	8	80 000
20 000	(b)	6	120 000
100 000	4	(c)	300 000
600 000	6	2	(d)
(e)	10	1.2	1 200 000
1 200 000	(f)	3	3 600 000
1 800 000	3	(g)	7 200 000
2 000 000	12	1	(h)
	6	2	8 000 000

## ANSWERS TO THE EXERCISE

**TABLE 1**

(a)	1 200 000	<u>Formulae</u>
(b)	1 600 000	
(c)	10 x	$y \times z$
(d)	50	
(e)	6 000	$y = w/z$
(f)	800	
(g)	4 x	$z = w/y$
(h)	10 000 000	
(i)	5 x	

**TABLE 2**

(a)	10 000	<u>Formulae</u>
(b)	2	
(c)	3	$v = z/y$
(d)	1 200 000	
(e)	1 000 000	$w = 12/y$
(f)	4	
(g)	4	$y = 12/w$
(h)	2 000 000	
(i)	4 000 000	$z = v \times y$