

The National College of Art and Design.

Department of Industrial Design.

The Design and Manufacture of Camera Accessory Bags.

by

Gavin Nicholson.

Submitted to the Faculty of History of Art and Design and Complementary Studies in the Candidacy for the Degree of Bachelor of Design

1993.

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Chapter 1

Introduction.

This thesis will analyse the design and manufacture of camera accessory bags. Since the advent of the camera, with the realisation that it is a very sensitive and delicate piece of engineering has come the equally important realisation that it must be protected. Designers knew this, and as a matter of course they also produced protective coverings to save cameras from the elements and damage due to shock. Since this time, we have discovered that camera accessories must also be protected carefully and with ease. Fashion has played a part in the forming of the design of these bags as nobody wants to appear unprofessional or unattractive. Also, with the advent of different cameras of varying quality and shape and also with the diversion / progression into video cameras has come the need for varying sizes, shapes, guality, function, etc. of these bags. The past ten years has seen the greatest expansion and divergence in the amount, quality and purpose of these products and will therefore be especially relevant and interesting. Therefore, this thesis will document the history of the bag from the original slim covering through to today's high quality, high specification models.

The thesis will deal with the actual process of designing and manufacturing one of these bags for today's highly competitive market. It will outline the history of the Hahnel Palmcorder Bag (as a case study) explaining the processes that formed it from concept stage, through design and development and on through to production and eventually distribution. The use of photographs and comparisons with competitive products will be particularly useful and interesting in this section.

Following on from these sections will be a look at the future and what it holds for these bags. I will seek professional peoples' opinions on how they perceive the styling, shape and function of these bags will grow. The thesis will examine the importance in this industry of watching what the competitors are producing and perhaps more importantly what way the parent industry (camera manufacturers) is developing (ie. the importance of miniaturisation, the development of form and the production of new hardware).

Introduction

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Explanation of the thesis plan

Chapter two of the thesis will analyse the history of camera bags from the initial realisation that they were necessary through to modern professional products and briefly it will examine the forerunners to the bags of today. This section of the thesis will give the reader an appreciation of the origin of today's camera transportation units.

Chapter three deals with the development of camera bags over the past ten years. It will document the great expansion and divergence in the amount and the quality of these products that occurred over this time. It will also show how the industry borrowed ideas from other related industries and finally it will show how the technology that was created for transporting cameras has been adapted to cater for other delicate items (in different industries). This section of the thesis will give the reader insight into how an industry grows rapidly over a space of time.

Chapter four focuses the reader's attention on one particular manufacturer in the south west of Ireland. It shows (by documenting the history of the company) how it grew during it's boom time and how it develops it's products. The in depth case study of the research, design and manufacture of it's newest bag shows exactly how an idea grows into a successful product, thus giving the reader complete understanding of how the industry works.

Chapter five (the Epilogue) will deal predominantly with the products of the future. I will give my and other people's views on how these products will be styled and produced. Trends in miniaturisation and the diversification of the industry will be examined to give a forecast of future design. The second part of chapter five concludes the thesis. It will be a brief overview of the work showing how, what and where it has made progress.

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Chapter II

The Origins and Early Development of Camera Protection.

This section of the thesis will deal with the earliest types of camera protection. It will trace the development of this practice from it's origins until approximately ten years ago. About a century ago, dry plate cameras came into existence. These cameras signaled the beginning of photography as we know it. Photographers had a machine that was portable and just straightforward enough to permit simple pictures to be taken. The demand for this technology was great. Photography became a growth industry.



Fig. 2.1.1. Early folding camera.

The Origins and Early Development of Camers Protection.

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Fig. 2.1.2. Portable bellows camera.

The bellows camera was the photographer's main tool. This delicate machine had to be transported to allow the photographer to do his work. Early designers saw this and devised a system whereby the camera could fold into a rigid wooden box that became the exterior of the camera when in use (Fig. 2.1.1., 2.1.2.). The wooden box was also used to carry the photographer's accessories as they were also extremely fragile (Fig. 2.1.3.).





Fig. 2.1.3 An early photographer with delicate equipment housed in wooden boxes.





Fig. 2.1.4. Voiglander camera in wooden box.

As the camera itself developed it became smaller. Fig. 2.1.4. shows a very early example of a Voiglander camera with it's accessories. All of these are housed in a wooden box that closes to protect it's contents. This box is an obvious development from the previous examples. The following illustration (Fig. 2.1.5.) shows how the wooden box developed into a more practical case with catches, lock and a carrying handle. This example from the 1930s seems more sympathetic to it's contents with it's softer interior. As you will see in Section 3, this rigid case soon developed into the aluminium models that still exist today.





Fig. 2.1.5. Development of the wooden box into a more practical case.





Fig. 2.1.6. Box Brownie and shroud.

The other line of development that brought with it protection for the camera was that of the shroud. This device is a thin covering that usually takes (roughly) the shape of the exterior of the camera. This safety feature is by it's nature quite flimsy and therefore is only expected to guard the camera to a certain extent. The nineteen twenties brought with them the advent of the roll film camera. The most famous of these was the Box Brownie. This camera was both cheap and practical and brought with it the first real mass interest from the public. To help safeguard the camera, canvas bags were produced to transport the machines (Fig. 2.1.6.).





Fig. 2.1.7. Voiglander camera and shroud.

As the camera developed so did their respective shrouds. Fig 2.1.7. shows a Voiglander camera from the 1940's. This camera was supplied complete with a leather shroud that remained attached to the camera most of the time. This basic type of covering can be seen on today's SLR's in an almost unchanged format.









Fig. 2.1.9. Cinecameras and shrouds.

These shrouds were also used to protect other developments in the industry. Fig 2.1.8. shows a metering device suitably covered, while Fig. 2.1.9. shows two early cinecameras and their respective shrouds. The holes in the side panels allow for the operation of the cameras without extracting them from their shrouds.





Fig. 2.1.10 Modern camera shroud.

In the latter half of the twentieth century camera protection began to grow in complexity. The different areas of protection became more specific, and definite lines of development could be clearly defined. Aluminium cases were now commonly seen, shrouds were now being developed utilising new materials and opening mechanisms, and were now clearly more aestheticly pleasing (Fig. 2.1.10).





Fig. 2.1.11. Modern accessory bag.

The late nineteen sixties brought with them a new means of camera protection that was to change the perception of this area of design. This was of course the camera accessory bag (Fig. 2.1.11.). These bags allowed the photographer to carry his camera and it's accessories over a distance and through unfavourable conditions with convenience and comfort that would have previously been impossible. The development of these bags heralded a new method of camera protection that is still developing today and is set to continue in the future.

Modern accessory beg

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Chapter III The Development of Camera Bags Since 1980.

Introduction.

In the years up to 1980 the evolution of the camera's carrying case had been very constant (if not slow). The design process that was involved could have been described as sensible and predictable. Instead of thinking of the protective coat that surrounds the camera as a separate product the camera bag was usually designed to pale into insignificance beside the camera itself. Indeed there was nothing wrong with this practice in itself as most of these coverings were usually bought with the camera (as an included accessory) and were not themselves a great selling feature. Their purpose was purely functional and any design for the aesthetic of the covering would have been solely to help it compliment the look of it's camera. Any camera accessory bags that had been in production up to this time could also have been described as being bland. But, this was for another reason. The two principal types in production were a) the large padded soft bag, and b) the aluminium case. Both of these varieties were used almost exclusively by professionals and therefore their purpose was to be as functional as possible. The people who used these bags were primarily interested in getting a job done and therefore excessive ornamentation or gimmickry (purely for the sake of it) would have been completely superfluous. During the late seventies and early eighties there was a growing interest among the public in photography. The quality SLR camera was no longer the domain of the professional photographer. Ordinary people began to take photography more seriously. This trend was reflected by the mushrooming appearance of magazines such as Amateur Photographer that emerged at this time (most of whom have survived until today).

The influence of the Far East at this time (and indeed today) must not be underestimated. In these countries the fascination with photography need not be described.

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The Far East should also be recognised for it's role in the production of these cameras and more importantly for it's production and development of the fixed focus compact camera. It was this influence that showed us how the camera could be given a production size that could be described as truly worldwide.

In industrial nations the camera is as commonplace as the television set. Photography is a popular and vastly lucrative leisure enterprise which has been designed to satisfy every level of consumer interest. (Peter Dormer, 1991, p15).

This ability to produce huge quantities of the same product at relatively tiny manufacturing costs paved the way for the recent trends in amateur photography that overtook the public. Now, even children could afford to own a camera. Also, unlike the earlier home cameras (Box Brownies Etc.) these ones had internal flashes (that were not disposable) and film (usually the size 110 variety) and processing became even more widely available. The above mentioned trends helped even further to make the camera an object of desire. There were a great many variations that overtook the camera industry. Some such as miniaturisation or colour changes could be described as evolution but others are much more interesting and memorable such as the instant camera (that produces finished photographs immediately by causing a chemical process initiated inside the camera), and the Disc camera. Most of these trends fell eventually by the wayside but during their peak selling times they sold millions. Most of these cameras necessitated protective pouches and this could only help to push the evolution of the camera bag. We will soon examine how this trend was more far reaching than may at first meet the eye.

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Designers are usually conservative in their approach to work. Their job is to provide people with what they want, and most people want the familiar. Occasionally designers do invent but generally design follows in the wake of earlier traditions, styles and fashions. Early railroad locomotives looked little more than water pumping machines on wheels, and the cars they drew looked exactly like the stage coaches they were replacing. This was not just because of the limited skills available at the time; it was essentially because the imagination of the designers concerned could not - as ours cannot stretch much beyond the known. Not even Henry Ford, the great American automobile designer, could make the mental leap from a model T to a streamlined sedan without running boards. Like everything else, design evolves.

(P. Dormer, 1991, p10).

What Mr. Dormer tells us here is that before the last decade the accessory bag relied on the trends in camera design to mould it's own shapes. And, this is still true today (to some extent). However there is another influence that changes the shape of accessory bags and that is fashion. So how exactly did these influences sway the course of the design of camera bags? It is only in the past ten years that the advent of the camera bag has come about. The mass market appeal combined with the ever growing influence of fashion as it infiltrates every aspect of our lives has taken the once simple accessory bag / camera shroud (and the technology that is used to create them) in many varied directions. It would be futile to try to put dates to the advents of the different variations that appeared over recent years as most of these are the product of evolution (as mentioned earlier). And it would also be impossible to credit the following designs to any particular designer as most are anonymous.

Instead I will document the recent developments in this highly competitive industry under the following headings.

- 1. Variations in Primary Function.
- 2. Variations in Secondary Function.
- 3. Variations in styling.

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3.1 Variations in Primary Function

Originally, it was normal for companies to produce a range of about three bags. These were divided as follows. The largest and most expensive was a bag owned by a serious professional. It was required to carry up to three complete SLR set ups. The second largest bag was used by well equipped amateurs or professionals travelling light. The smallest bag was designed to carry one SLR and the minimum of equipment (this fact is examined in greater depth in section four). Apart from these bags there was very little else on the market. Smaller, simpler cameras often warranted no extra protection due to their low price and so there was no market for the manufacturers (of bags) to capture. Today however, it is not strange for the larger manufacturers such as Rovi, Cullman or Lowe to offer over forty bags in their ranges. All of these bags will have slightly or vastly different functions from one another.

The best way to document this change is to use examples.

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Flow chart documenting the recent development of, and the divergence in the use of the technology used in the camera bag industry.

1980		
Approx.	Thin covering shrouds (often leather) used for minimum protection around an SLR unit.	
	Rigid aluminium cases used solely by professional photographers.	
	 Three principal types of padded bag 	
	a) Professional (large)	
	b) Pro/Am (medium)	
	c) Lightweight (small)	
	 Increase in technology and great divergence in type of bag 	
	 available to cater for various emerging market sectors. 	•
	 Use of technology for camcorder and more recently, palmcorder bags 	•
	 Use of technology for bags dedicated to other camera equipment eq. tripods lenses etc. 	•
	 Use of technology for the protection of portable laptop computers 	
	 Use of technology in modern briefcases (containing valuables such as mobile telephones etc.) 	
	 Use of technology for camera equipment rucksacks. 	•
	Combined technology for the development of bags to	
	 walkmans. Also used for modern 'bum bags' and bags with miscellaneous functions (containing valuables). 	•
- 3	 Modern development of these shrouds. 	
1.15	Countless types of padded accessory bags.	
	Aluminium cases of superior quality.	
	Recent use of this technology to produce rigid plastic models.	

Recent use of this technology to protect expensive camcorders.

Jackets with purpose made pockets for camera equipment.

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The Development of Camera Bags for Professional Photographers.

Early in this century professional photographers were the only people who had reason to own, or the expertise to operate cameras. The machines of this time were cumbersome and had to be transported very carefully. As the profession developed and the cameras involved became smaller and more complex the amount of accessories used by professionals multiplied rapidly. Until the evolution of the SLR camera most photographers brought their equipment around in simple (often home made) cases. Cameras themselves (as explained in chapter 2.1) were often wrapped in simple shrouds. The rigid boxes obviously developed into today's aluminium cases. However with the demands of increased mobility that some of today's photographers must have it became evident that a cumbersome hard case was obsolete, hence the development of the padded accessory bag. This bag, that was later adapted for many purposes proved much more user friendly. It could easily cope with three SLR set ups and some even carried a tripod. For a time it seemed as though all photographers would switch to this format and that it had reached the end of it's evolution.



3.1.1. Typical Aluminium Cases.

ALC-GA

ALC-LA

Inside Dimensions $350 \times 220(45 + 175) \times 180$ mm Weight 3,800g Tripod Belt Holder Spare Dividers 168×170 mm Master Carton 4 pcs./0.125m³ Storage Exemple:

ALC-MA

Weight 2,900g Tripod Belt Holder Spare Dividers 138 \times 158mm Master Carton 6 pcs./0.115m³ Storage Example:

ALC-SA

Inside Dimensions $270 \times 200(45 + 155) \times 137$ mm Weight 2,200g Spare Dividers 145 × 113mm Master Carton 6pcs./0.115m³ Storage Example:

The Development of Camera Bags for Professional Photographers.

Early in this certury professional photographers were the only people who had reason to own, or the expertise to operate carrenas. The machines of units time were cumbersome and had to be transported very catetoly. As the profession developed and the carrenas involved pacatrie smaller and more complex the amount of accessories used by professionals multiplied rapidly built the evolution of the SLF camera most protographers brought their (as explained in onapte) 2.1) were often wrapped in simple strougls. The noil demands of increased mobility that some of today's photographers must have it became evident that a cumpersome hatd case was obsoleta. Hence the demands of increased mobility that some of today's photographers must have it became evident that a cumpersome hatd case was obsoleta. Hence the demands of increased mobility that some of today's photographers must have it became evident that a cumpersome hatd case was obsoleta, hence the for many purposes proved much more user mendly. If could easily topp with three SLF set ups and some even carried a timod. For a time it seemed as thoogh all photographers would switch to this format and that had reached accessory the developed with the topp with three study all photographers would switch to this format and that had reached access of the easily cope with However many photographers, particularly photojournalists who need to be extremely mobile, tended to be dissatisfied with the padded bags. These people chose to carry bags with thinner linings to reduce bulk. If they felt anything needed particular protection they wrapped it in individual pieces of cloth. One of these photographers was Jim Domke.

I designed my first Shooter's Bag to solve a problem, without a thought that I might actually end up in the business. As a staffer at the Philadelphia Inquirer, I needed a bag I could work out of fast, and on the run if need be. Most bags are designed more like carrying cases or storage devices, with way too much bulk and padding. This is not only awkward and unnecessary, but takes away utility, speed and capacity.

Jim Domke, 1992, p2.

Jim Domke made his first bags at home on his kitchen table. He now is one of the world's most successful manufacturers of camera bags and accessories. Humber many photographers, particularly photojournalists who need to be solutionely mobila, randed to be dissatisfied with the padded bags. These people chose to carry bags with thinger trangs to reduce but. If they felt anything needed particular protection they wrapped it (mutdividual pleces of coll). One or these photographers was Jim Domice.

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Fig. 3.1.2. Tamrac accessory bag.

a) Fig. 3.1.2. shows how the original long and low padded bag has survived. The Tamrac Correspondent Series combines the use of lighter, stronger materials with the addition of special features (count the pockets) to produce a bag that is viable. Notice the ability of these bags of folding almost flat when empty for added convenience.





Fig. 3.1.3. Accessory jackets.

b) (Fig. 3.1.3.) These Tamrac jackets provide enough room for the equipment of most highly mobile photographers (especially photojournalists). Besides removing completely the problem of carrying a bag (leaving the hands free for more important work), these jackets also distribute the weight of equipment evenly and help to maintain body heat.

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c) (Fig. 3.1.4.) Rucksacks are a very recent development using the technology created for the earlier padded bags. They are used for transporting equipment over large distances, especially when both hands must be kept free at all times (eg. climbing).





Fig. 3.1.5. Modern rigid cases.

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d) (Fig. 3.1.5.) Modern rigid cases include the above mentioned aluminium models but also in existence are lighter, cheaper plastic models.



The Development of the Padded Bag.

As mentioned, the padded bag was originally developed by professionals for professionals. But over the past ten years it became evident that it's uses were much more wide varied than originally imagined. Smaller bags were first developed for people hoping to carry less equipment. These bags were attractive to amateurs who wanted to protect their investments. With the advent of the camcorder people began to use these padded bags for protection. Already, these bags were being used for purposes that they were not originally designed. Therefore it was only a matter of time until purpose designed bags would appear. As camcorders miniaturised recently and became palmcorders a need also arose for a specially designed bag (See section four).



Laptop computer bag.

Development of the Enduced Bac

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the he stored when the reputrient super when not in use But the history of the padded bag does not end here. A few years ago, electronics manufacturers began developing lap top computers (Fig. 3.1.6.). These devices are portable and light. They are designed for executives who have to work while travelling. The manufacturers of padded bags foresaw the need for protecting this expensive hardware, hence, the purpose built bag.

This diversification has also spread into the production of padded briefcases for business people carrying delicate items such as mobile telephones etc. Padded bags are also purpose built for items such as tripods, lenses, car stereos, etc. (Fig. 3.1.7.)

Fig. 3.1.7. Various uses of padded bag technology.

Fig. 1. A probability of the code of explosion outputs in the A second secon



Fig 3.1.8. Small colourful bags.

We have also seen over the last three years the evolution of yet another bag. This one, designed for carrying small items of value (usually in a highly colourful way) such as compact cameras or walkmans could be described as a hybrid of technology. It is principally a padded bag similar to the ones described above except that it retains some of the characteristics of the shroud type covering (eg. smaller dimensions, often close fitting, thinner layers of shock absorbent material.) (Fig. 3.1.8.).

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3.2 Variations in Secondary Function

As the number of bag producers and consumers grow rapidly so does the great rivalry and competitiveness of these producers. To manufacture higher quantities of their end products with greater quality at lower prices is a major concern in the industry. Each of the large producers try to out sell one another to gain a larger share of the market place. One way in which they do this is by building into their bags many secondary functions. These practical additions are not only very useful to the user on a long term basis but are also a major advantage to the manufacturer at the selling point. Secondary functions improve the bag's performance in one way or another. They may prove to make the bag stronger, they may be an addition that allows it to carry something in a particular way that is inferior (or non-existent) in a competitor's, or, it may be an alteration to the bag's design that makes it more *ergonomic or accessible for the user.

The following examples are pieces of equipment that are of interest due to their ability and innovation in performing specific tasks.

* Ergonomics

Ergonomics n - study of the relationship between workers and their environment.

In our case this means how well the bag performs in relation to the human body (eg. How easy is it to reach into and extract from .)

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Fig. 3.2.1. Globetrotter bag.

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a) (Fig. 3.2.1.) The Rovi Globetrotter range contains a typical mid size camcorder in a vertical (as opposed to horizontal) position . For some camcorders this means that they can be withdrawn from the bag more quickly and with less effort. This is a good example of improved accessibility.

DAVID BELOWING





b) (Fig. 3.2.2.) This Tamrac bag has many pockets with innovative ways of accessing them that improves the ease of use of the bag.



Development of shroud.

c) (Fig. 3.2.3.) This bag that is obviously a derivative of the earlier shrouds (due to it's shape) provides space for an extra lens in it's base.





Fig. 3.2.4. Growing uses of technology.

d) (Fig. 3.2.4.) An example of how one industry adapts ideas from another. The novel way of expanding the bag to increase it's internal capacity was originally used by suitcase manufacturers.
 Notice also the importance the advertisers give to showing 'strong and sturdy' buckles and peripheral functions of the bag such as it's nametag.



Fig. 3.2.5. Ergonomic bags.

e) (Fig. 3.2.5.) Again, ergonomics is a feature in these advertisements for bags that are mounted on belts. These recent innovations allow the user to carry (hands free) an amount of equipment in an easily balanced and less tiresome way.

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Fig. 3.2.6. See through pouch.

f) (Fig. 3.2.6.) This small pouch (to be transported in a larger bag for safety) provides the user with a quick reference to what exactly he has at hand (due to the fact that you can see through it).



Fig. 3.2.7. Bag adapted for bicycle

g) (Fig. 3.2.7.) This adaptation of a standard bag allows it to be mounted on the handlebars of a bicycle thus giving it an outdoor pursuits theme.






Fig. 3.2.8. SLR shroud with unique feature.

h) (Fig. 3.2.8.) This otherwise normal shroud for an SLR unit is unique in that it allows the user access to the camera in adverse weather conditions via a zip opening in the front.



Shock absorbent material.

i) (Fig. 3.2.9.) Domke's new range of protective wraps allow the user to surround important pieces of equipment in a shock absorbent layer of material thus reducing the bulk of the larger bag it will be placed into. p34







Fig. 3.3.1. New materials.

Modeil Brüssel

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Style has been a growing factor in the design of camera bags since the time when they started to become attractive to the general public. People want their bags to make a fashion statement. Some bags are required to be subtle. They must blend in well with the user's clothes regardless of age or sex. Others are required to be professional in function and appearance while others still, try to make a bold and colourful (usually sporty) statement. It is obvious that the three above mentioned genres of bag are very different from one another. They could be even further subdivided to show other more subtle changes in purpose. However, I will only deal with the third example of style as it has been the most recent, dramatic and important change in styling that has come about in accessory bags since their original appearance. For many years camera bags have conformed to a strict code of dress. Almost always they were predominantly black or grey. This was primarily because of their purpose (ie. These bags contained very expensive pieces of equipment, that were owned and operated by a select few professional people. The outwardly appearance of these bags merely conveyed their inwardly purpose.)

However, more recently with the diversification of purpose and user of these bags the need to revise their styling has become more evident. As camcorders became cheaper they became more known as a toy than as a business machine. Increasingly, they were used by amateurs to record their holidays or sporting events. The following examples show how styling, colouring and choice of material has changed to portray a particular image of the owner.

Note the theore a proving tactor in the design of carnera usigs since me inter when they started to become attractive to the general (rubits. Troope way that bags to make a fashion statement, Some bags are required to be subla. They much head to well with the user's clothes regardless of age or sea of the three equired to be protessional in function and appearance when others and, hy to make a pole and colourial (usually sporty) statement. It is obvious and in the three apove mentioned genes of bag are very different from one another three apove mentioned genes of bag are very different from one another three apove mentioned genes of bag are very different from one another three apove mentioned genes of bag are very different from one another three apove mentioned genes of bag are very different from one another three apove mentioned genes of bag are very different from one another three apove mentioned genes of bag are very different from one another these bags in a structure of the protect of the state of the bags in process in the second dramatic appearance. For many years carrier a bags have contained very expensive means because of their purposes of bags metely converyed their original appearance. For many were owned and operative black or grey. This was primarily because of their purposes (in These bags metely converyed their invaridy dupose). However, more contained very expensive process the quiption. In the owned and operative with the diversification of bags and user of appearance of these bags metely converyed their invaridy dupose. The to barriely those tags the need to raise final styling has become more evident. As

Comporders became chooser they became more known as a toy than as a puercers machine increasingly they were used by antateurs to record their holidays or sporting events. The following exemptes show now styling colouting and choice of material has changed to portray a particular image of the owner.



Fig. 3.3.2. Outdoor pursuits bags.

a) (Fig. 3.3.2.) These bags use colour schemes most popularly identified with backpacking, camping and other outdoor pursuits.

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Fig. 3.3.3. Outlandish styling.

b) (Fig. 3.3.3.) Rovi are known for their outlandish styling. These bags have particular themes. Note the safari look and the strange western theme bags. p38





Fig. 3.3.4. New styling influences from different industries.

c) (Fig. 3.3.4.) The hybrid use of camera bags for walkmans caused a great influence on the bag industry. Walkmans by definition are extremely portable. They have a youthful, sporty image. Perhaps, since bags were designed to cater for this market the effects could have been far reaching. This could explain to some extent why some larger bags that have been designed since this time adopted these colour schemes so quickly.



Chapter IV Hahnel and the Hahnel Palmcorder Bag

Introduction

This section of the thesis is dedicated almost entirely to the history of the Hahnel Palmcorder bag. I designed this bag during the summer of 1992.

The thesis will outline the history of this bag explaining the processes that formed it from concept stage, through to production and distribution. The use of this bag as a case study will explain in detail how designers and manufacturers implement their ideas.

Hahnel Foto Industries

Hahnel Foto Industries is a medium sized company that imports and manufactures all types of camera equipment and accessories. They have been based in the small town of Bandon, west of Cork city for over ten years. During this time they have always produced a growing and evolving range of camera bags that are suited to people of varying needs ranging from the rank amateur to the serious minded professional.

Just over a decade ago Walter Hahnel moved his family and company from Germany to Ireland. The offer of tax incentives combined with the opportunity of a promising manufacturing unit and an optimistic European outlook outweighed the obvious isolation of the site. Soon the Hahnels were producing various simple camera accessories on a relatively modest scale. Predominantly, Hahnel Foto Ind. bought in products from the Far East. Either in Ireland or in their original manufacturers premises the products were packaged using the Hahnel Logo.

Chapter IV Hannel and the Hafmel Palmoorder Bag

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Hamma Foto Industries — a medium sized company that imports and minimations at types of cameta equipment and accessories. They have been based in the small town of Bention, west of Cork city for over len years. During this trine they have always produced a growing and evolving range of cameta bags that ere suited to people of varying reads ranging from the rank emateor to the stripus minest protestional.

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From the original outset of his company, Walter Hahnel saw that there was an opening in the market place for protective coverings and carriers for cameras. He also saw the necessity of different bags with different specifications for different users.

The four primary groupings that he foresaw were

a) The SLR user.

b) The amateur photographer with a limited amount of equipment to carry.c) The pro/am photographer with a medium amount of equipment to carry (ie. one or two SLR set ups).

d) The professional photographer (completely equipped).

a) The smallest unit was originally designed to carry one SLR camera with the minimum of extra equipment. This could include at most one lens (attached to the camera) and a couple of extra rolls of film. This bag was designed for travelling light while also affording maximum protection and most rapid access. The exterior dimensions of this bag were to be approximately
W18.5cm X H17.5cm X D8.5cm. The interior dimensions were approximately less one inch all around from these dimensions due to padding.

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Figure 4: A figure of the comparison of the signed of the figure of the sub-state of the figure of the figure of the state of the st

b) The second bag measured approx. 18.5cm X 17.5cm X 11.5cm. This bag was aimed predominantly at the amateur photographer. It afforded an adjustable amount of extra space (by the introduction of padded separators that divide the internal space of the bag) that allowed for a flash unit, an extra lens and some extra film. A net pocket (added to later models) in the top of the bag allowed the user to pack extra filters for the camera and he could also bring along any documentation he may need (eg. passports etc.).

c) The third bag in the range was still quite compact (W35cm X H22 X D22). This bag, aimed at the serious amateur or professional travelling light, supplies all the same features as the above mentioned bag with more space for extra lenses or even an extra camera unit (with the minimum of equipment). It's other main feature is the inclusion of external pockets.

d) The fourth bag in the original range was aimed solely at the professional.
 This large bag (almost 60cm long) provides enough space for three complete
 SLR set ups (just about all the equipment a mobile photographer could need).
 This bag was to be expensive and was only ever ment for limited production.

Over the past ten years these four bag types remained in almost constant production. Of course they evolved greatly over this time, the use of colour and materials varied, as did the inclusion of special features (eg. net pockets, special straps, etc). However the basic bag sizes and specifications stayed the same. This formula proved so successful that when production reached it's peak about five years ago, the range of bags were internationally renowned due to their fine styling combined with useful, no-nonsense features.

Since this time however, the bags slowly began to lose their popularity. This was due to a great many factors. Chiefly among these were a) A flooding of the market by cheaper (Far Eastern) models, and b) The rapid change in the market that occurred with the advent of the affordable video camera and the miniaturisation, technological advance and increased availability of the compact camera.

b) The second bag measured approx: 18.5cm X 17 Scr. Children and an east almed predominantly at the amateur protographer in attended an address almed predominantly at the amateur protographer in attended an address of the introduction in gadded separators that divide the internal space of the bag.) that bilowed for a flash unit, an extra space of the bag.) that bilowed for a flash unit, an extra space of the bag.) that bilowed for a flash unit, an extra space of the bag.) that bilowed for a flash unit, an extra space of the bag.) that bilowed for a flash unit, an extra space of the bag.) that bilowed for a flash unit, an extra space of the bag.) that bilowed for a flash unit, an extra space of the bag.) that bilowed for a flash unit, an extra space of the bag. The bag.) that bilowed for a flash unit, an extra space of the bag. The bag.) that bilowed for a flash unit, an extra space of the bag. The bag. The bag allowed for a flash unit an extra space of the bag. The bag allowed for a flash bilowed for a flash bilowed for a flash unit. The bag allowed the user to pack exits flaters for the camera and he could also biling along any documentation he may need (leg. passports etc.)

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(f) The fourth bag in the original range was aimed solely at the processional This large bag (almost 60cm long) provides anough space for times controlete SER set dos (just about all the equipment almobile photographer rould need) This bag was to be expensive and was only evenment for timited production.

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Three years ago the company decided that the decline in sales was so serious that it was imperative that the specification of these bags that had worked for so long would have to be re-examined and possibly rewritten. The Hahnels first looked at the styling of their bags. The grey exterior that was common to the whole range of bags that was once so successful now seemed a little dull when compared to their competitors. This was due mainly to a trend that was common throughout the industry of introducing bright or contradictory colours. This trend was a good reflection of the growing influence of fashion in the industry. It was also due to the broadening in the range of consumers which now included the less well off younger consumer and a small (but growing) number of female buyers. Regardless of the exact reasons for this change in the market, the evidence of the shift was definite and therefore something had to be done to reduce the loss of sales that was occurring. The Hahnels wanted to address the problem of their bags looking old fashioned (primarily due to their colour), however they didn't want to simply follow the market and start producing bags with radiant colours as this would totally diminish the Hahnel reputation as hard wearing and functional bags. The eventual satisfactory answer to the problem was a two tone bag that uses a combination of black and green material. This solution is both pleasing to the eye for both young and old users. It can also be applied across the range. The combination was achieved by testing several units on the market place.

The Hahnels found that for some reason the three smaller bags quickly picked up sales but the largest bag did not. The preferred solution was to try to redesign the bag completely.

Expense was not to be a major consideration as the bag was aimed solely at the professional user. Strangely as it seemed at the time, this bag was also a failure and it never really got beyond model stage as feedback from the market showed that this bag was also unacceptable.

Michael Hahnel (Chief designer) decided that production of the present day bag should be discontinued and the development of the new bag should be placed on hold pending an enquiry into the reasons behind the apparent loss of interest on the market place.

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Mr. Hahnel now found that his range of bags was one short. It was decided that the same mistake would not be made again. During 1991 and 1992 market research was undertaken to determine what type of camera bag was required.

It became evident that over the past few years the camera industry had evolved greatly. And with this, so had the purpose of of Hahnel's bags. People were now not only using the bags for transporting their still cameras. Instead, the advent of the affordable camcorder had changed or rather increased the scope of the market.

NOTE : Appendix B shows some sketches of the of the ill fated replacement bag that was doomed to fail even before it's design due to the lack of market research made before it's initial design. Note of poster on an extent of a second part of the post of the poster of the

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Luckily, due to the varying sizes and function (adjustable interiors) of the existing bags they were able to cope with the demands of all sizes and shapes of camcorders and their accessories. However, over the past few years the rapid growth of video camera sales has brought with it a struggle for ever increasing technology. With this has come miniaturisation. And it is this miniaturisation that has seen the birth of a new type of camcorder. The Palmcorder (as it is now popularly known) is a great step forward for it's manufacturers. Only now is the public offered the opportunity of producing good quality moving pictures at an affordable price while using a machine that has increasingly simular dimensions to a still camera. It was this new niche in the market place that gave Mr. Hahnel the opportunity of producing a new bag. Palmcorders are complex and delicate little machines. They require careful storage and do not take well to shock or heavy handed treatment. They must be kept free from moisture at all times and dust can be a major problem. When in use palm corders are quite simple to operate. However, they require a lot of accessories. Their tapes only last for thirty minutes before they must be replaced. While their batteries only last for a few minutes at a time. Since palmcorders do not operate extremely well in dim conditions they often need an external light source and this adds further to diminish battery life. To offset these problems each palmcorder comes equipped with a host of accessories.

Included in these are usually -

- 1) A battery charger,
- 2) An AC power adaptor,
- Leads to connect the palmcorder to a video recorder,

4) Leads to connect the palmcorder to a TV set, and-

5) If the palmcorder is of the VHS C variety it usually includes an adaptor that comes in the shape of a regular VHS cassette but allows a VHS C cassette to be slotted inside for viewing on a standard video player.

It was the above mentioned facts that allowed Michael Hahnel to define the brief for the palmcorder bag and work began on it's design in the summer of 1992.

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The Brief

A brief is a list of goals or objectives of criteria, constraints and parameters. The designer uses it as a tool to direct him in the correct path to follow while developing his product.

Man exploits his mental endowment more fully if he not only acts intelligently but also understands intellectually why he acts as he does, and why his procedures work.

Simon Jennings, 1987, p65

This means that a body of knowledge and a list of parameters helps the designer in his or her work, and that thinking in itself is an essential part of the work. To be successful - this thinking process must always precede the doing. Mies van der Rohe emphasised this fact with his " Design is doing more with less " theory (Jennings, 1987, p66). The Designer must reject one solution in favour of a simpler alternative or one that is more relevant - one that does more with less .

The Palmcorder brief was like most others in that it was formulated from market research and that it came in the form of a list of instructions.

a) Function

The function of the bag is what sets it apart from most other bags on the market (Here is where the Hahnel Palmcorder Bag later found it's most unique feature.). It should carry a palmcorder (from any manufacturer) and all of it's accessories in complete safety. The interest of the user (eg. comfort, convenience and style) was to be foremost in the designer's mind.

b) Aesthetics, Materials, Colour.

These three areas were covered together in the brief as they are intrinsically connected. Materials and colour were predetermined to a certain extent (The colour scheme of Hahnel's bags is set for the next few years. They must be two tone green and black). However the brief also allowed for some experimentation (for obvious reasons) and a second bag using different colours but a similar overall shape could be developed.

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Accurate State State State In a construction of the second state of the second state of the second state of the state of the second state is a second state of the second state of the second state of the second state is a second state of the se This bag could either be used to extend the range or be offered for sale to another manufacturer at a later date. The materials on the exterior of the bag were to be hard wearing. While keeping cost as a consideration, these materials should stay attractive over a long period of time (thus ensuring Hahnel's quality reputation). They must also serve as a good protector against the elements. Here, heat and dust but especially moisture penetration are important factors.

The aesthetics of the bag is almost all important. When a prospective customer enters a shop one bag must catch his/her eye more than any other. This may be the deciding factor of the purchase. Therefore styling was an important consideration. The bag should be attractive, convenient and even a source of excitement to the customer. He / she must feel comfortable about their appearance while wearing the bag. It must conform to most modes of dress, regardless of age, sex or purpose (eg. sporting, social or business).

c) Environment, Safety, Padding.

Again these three areas were treated as a group as each relied on the others to determine it's exact requirements. The 'Environment' that the bag would have to work in determined much about the overall shape of the bag's design. The function of the bag would be to protect a video camera and it's accessories at all times. This would mean that it must be completely weather proof during a heavy fall of rain. It's seals must be strong enough to withstand dust and it must be remembered that when the camcorder was not in use it would probably spend the majority of it's life inside the bag.

Safety and Padding: While the camcorder is in transit or even when it is in storage, safety and padding are extremely important. Apart from the danger of the constant knocks a bag receives while being worn, the designer must remember the less likely occurences (The bag could be dropped from waist height onto a hard surface. If this happened the bag could turn as it fell. Therefore, the padding had to be adequate to protect the camera from damage under these circumstances.). In a topological construction and the construction of the texture of the intervence of the construction of the construction

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The padding of bags (sold to amateurs) is also necessary as a selling feature. People believe they are buying a better product if they can see and feel that their palmcorder will be protected. Finally, handles, catches, hinges and straps are important safety features on a camera bag. If any of these devices fail during the lifetime of the bag they could cause the palmcorder to come to an untimely demise.

d) Size.

Where size is encountered there is a dilemma that must be dealt with. The two opposing factors are -

1) The unit must be large enough to contain all that is required (any palmcorder and it's equipment).

2) The unit must not be so large as to be cumbersome.

e) Portability.

The addition of handles and straps and / or any other device that will aid the user in transporting the unit safely and conveniently. The unit must also be of a shape that allows it to be comfortably held.

f) Secondary Functions.

The designer was required to aid the user through the devices of pockets, quick release mechanisms or any other innovations that he saw fit to ease the use of the bag. One of these functions was the extraction (and replacement) of the camera from the bag in as quick a time as possible. However, these functions could not interfere with the primary function of the bag in any way.

g) Expense and Manufacturing.

The bag was to be in a similar price range as those in it's respective class. To ensure this, manufacturing costs were to be kept low. The bag was to be manufactured in an undecided factory in the Far East. It was then to be shipped first to Ireland and from here to it's final (mostly European) destination for sale.

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(initial case given was required to allot the user through the devices of protects, quick release mechanisms or any other innovations that he saw iff to base the use of the bag. One of these functions was the extraction (and replacement) of the camera from the bag in as quick a time as possible. However, these functions could not interfere with the primary function of the lag in any way.

1 Expense and Manufacturing 1

It is begins to be in a cimilar price range as mose in its respective tass. To ensure this intanularturing costs were to be rept low. The bag was to be manufactured in an undecided factory if the Fai East. It was then to be shipped first to tretand and from here to it's final (imostly European.) destination for sale. To keep prices low the bags should have an economy of materials and should use existing manufacturing processes if at all possible. Fittings, hinges and catches should be chosen from 'off the shelf' units that would all be made by the one manufacturer.

- h) Finally, development time was to be very important in this project.
- 1) Firstly, preliminary sketches should be completed as soon as possible.
- 2) Final design sketches were to be completed within two weeks of this time.
- 3) When a final design was chosen, three dimensional models should be made to allocate space for the contents of the bag.
- 4) After this, and using the collected information, technical drawings should be made. At this time, components such as suitable catches would be chosen and a number of explanatory drawings were to be made.
- 5) These drawings and other information were to be sent to prospective manufacturers for model making.
- 6) Models to be shown at Photokina for market reaction to the product.
- Adjustments to be made if necessary.
- 8) Production and sales to begin in late 1992 or early 1993.

(c) a process consistence of have been as have been as my of a state interval as a second as an interval as a second as an interval as a second as a se a second as a secon

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The Design and Development of The Hahnel Palmcorder Bag.

The research and compilation of the brief for this project had taken place over the time span of approximately nine months during 1991. The *Photokina exhibition was the place at which the original idea for the bag was spawned and it was hoped that one year later the new bag could be revealed at the show.

In the middle of April the concept sketches for the bag were first initiated. At all times the designers kept one primary constraint in mind. That was that the customer's comfort was all important. It was also important that the product would have a certain feature that would set it apart from it's competitors. It was decided to join both of these imperatives into one constraint. The bag's function was to carry (in safety) a camcorder and all of it's accessories from A to B. However, as anyone who owns a camcorder knows these accessories are not in constant use.

A good example of this would be a family situation such as a holiday abroad. Here the typical operator of the camera would be a parent. This person would need to transport the camera from home to it's destination. Ordinarily, the transporting bag would not be left out of hand or sight for any long periods of time during the transit but it would still need padding to protect it from the usual buffeting encountered during travel. All of the bags contents would be necessary on the holiday but it is important for us to understand which of these accessories would be used at different times. When the user arrives at his destination he would typically unpack the bag. Ordinarily, most of his equipment would be taken out of the bag as it would not be used initially (ie. all of the camera's batteries would be fully charged, and the video cassette adaptor and connection leads are unnecessary as the user would not have recorded anything yet.).

*An exhibition that takes place once every year in Germany. Here all the recent developments in the photo and video industries are unveiled. All the main manufacturers and their agents are present and it is the best place for gaining an accurate forecast of how the market will react to a product.

The Design and Development of The Hannet Palmoorder Bad.

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All an times the passigned Arch one primary constraint in mind. Their navidation in times the control has dated at a control of the bill individent. If was also incontent districtly preduct there are actual testing would reful a control to an actual testing would reful actual actual from in competitions. If was the bill individent to preduct the bill individent of the bill individent actual testing actual testing would reful actual testing would reful actual testing actual testing actual testing would reful actual testing actual testing would reful actual testing would reful actual testing act

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246 Evidential takes place once every yearing Germany Here at the reneric developments in the photo and video industries are unveloped. The multi non-contributines and their egents are present and it is the test place for gaining to substate intects) of how the market will react to a product. The spare accessories would presumably be left in the hotel for safe keeping (usually in a state of disarray) or else the user would alternatively have to lumber them around with him during filming. Ordinarily however, people like to travel light (if possible) and this means that they usually forsake the usefulness of the camera bag because of it's enormity. They do their filming with the camera held unprotected all day and usually it spends the majority of the time swinging about the operator's neck unprotected (on a strap).

It was decided that the Hahnel Palmcorder bag should in some way tackle this problem. How could the new bag provide enough room and protection for a camera and all it's equipment during transit, yet still become unobtrusive enough to be taken on outings? The first few pages of the sketchpad (Appendix C) show how this problem was tackled. There are many proposed solutions shown.

Included in these are -

a) A large bag (for the camera and most used accessories) with a 'strap on' smaller bag for little used items.

b) Two equally sized bags that join back to back.

c) An option where a very large bag holds all the equipment which opens to reveal a smaller bag that just holds the camcorder.

d) 'Drop down' (bellows effect) bag. Which creates more room on a more temporary basis.

The above solutions were all dropped because

a) This solution would be unergonomic as the bag would be too wide. This would cause it to get in the way when moving it tight spaces and the width of the bag would cause it to simply slip off the shoulder of the user when carried by a strap (due to leverage).

b) This solution was also forgotten because of it's unergonomic shape.

 c) This solution was not only dropped because of it's difficulty to transport but also because of the problems that it would create for the manufacturer.
 This bag would

1) use more materials and

2) take longer to manufacture due to it's great many more components.

d) This bag would not be sturdy enough.

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Instead, a different solution was chosen as it solved the former mentioned problems without creating any of the latter. This solution can be seen evolving over the rest of the pages of the sketchbook. It involved a bag that was to contain a palmcorder and some extra necessities (eg. a battery and a video light). Suspended below this (to avoid any of the carrying problems mentioned above) was to be another smaller bag. This of course was to contain all of the other accessories and could easily be removed leaving the above bag free to be taken on day trips.

The other problem that featured early in the sketch book and which can be seen evolving through the following pages is that of access to the bag's contents. This feature is deceptively important. Most people when using a palmcorder for pleasure purposes want to be able to retrieve the recorder as quickly as possible for instant use. Secondary to this, they also like to be able to replace the machine as safely and as quickly as possible. Solutions to this included.

a) A bag who's lid and body took a shape that left maximum access to the recorder when the lid was opened.

b) A bag that had an accordion effect that allowed the side panel of the machine (solutions like these were later completely dropped as problems concerning the safety of the camcorder became evident).Nobody wants to pick up an open bag and watch their camcorder fall out.

c) An interior with an incline built into it to allow the user hassle free access to an upside down palmcorder giving instant access.

As you can see the shape and function of the bag developed through the sketchpad until p71 (approximately p19/20 of the sketchpad) where most of it's structural shape and functions were preliminarily decided. The upper bag was to have an opening in the main compartment as shown with a second pocket at it's rear for extra video tapes. It is also interesting to notice from these pages that the exact fixing of the two bags was not set at this time. From this point onwards the fine detailing of the bag was decided in the sketchbook until around p75 (p30 of sketchpad) onwards where the aesthetic of the bag neared completion. From these pages you can see the main features and components that will be explained later.

p52

Instead, a different solution was chosen as it solved the former mentioned problems without creating any of the latter. This solution can be seen evolving over the reat of the pages of the sketchoook. It involved a bag that was to contain a paincorder and some extra necessities (leg a battery and a video light). Suppended below this (lto avoid any of the carrying unchiems mentioned above) was to be another smaller beg. This of course way to contain ell of the other accessories and course easily be removed leaving the above beg free to be taken on day trop.

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The final two pages chosen from the sketch book (Appendix D) for use in this thesis were especially important in the formation of the final dimensions of the bag. These pages were records of measurements of the many palmcorders on the market. This measuring was accompanied with model making (mostly in cardboard).

From the results we used mathematics to decide (as the last page shows) the dimensions of the bag that could provide the space for any palmcorder and all it's accessories with as little wastage of space as possible.



Fig. 4.1.1. Pages from the sketch book of the Hahnel Palmcorder Bag.

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Final Development of the Hahnel Palmcorder Bag

Now that the vital dimensions and shape of the bag was decided the next step in it's development was to find a manufacturer to produce models (for the fine tuning of the bag) and promise a finished product at a high enough standard at a reasonable enough price. Pages 76 to 79 show the sketches that were sent to prospective manufacturers. They were accompanied by lists of components, materials and instructions. Models began to appear at Hahnel around June and it was decided for the above mentioned reasons that one particular manufacturer be chosen. Their model was tested in a number of situations and a number of observations were made. a) The bag was a little too wide (1.5 cm).

b) The divider in the upper compartment was the wrong shape and would have to be changed to accommodate all palmcorders.

c) the handle height was unnecessarily high and was to be reduced.

d) The shoulder strap needed a better anti slip mechanism (This is a piece of rubber material that prevents the bag from slipping off the shoulder), and a better hinge at either end.

e) At the rear of the bag there was a flap that (when lifted) showed that the bag was not made from real leather. This would have to be disguised.

f) The lid of the bag was not closing properly and would have to be altered.

Finally, the exact buckles and lining material were specified at this time.

Through repeated model making, testing and consultation with the bag manufacturers a pre-production sample was eventually produced. This was demonstrated at Fotokina 1992 and was received with admirable comments. Immediately, small quantities were ordered for testing on the market place and the sales figures were again favourable.

Production of the bag began in November 1992 and initial sales are promising.

Photographs of the Hahnel Palmcorder Bag are contained in appendix D.

Final Development of the Hahnel Palmoorder Bag

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Chapter V

Epilogue

a) The future.

The future design of the camera accessory bag is by no means certain. However, if we examine the industry of today we can make a few fairly definite projections. As it stands, there are now many variations in the cases, shrouds and accessory bags available in the camera and video areas. There is no reason for the development of these bags to halt. Undoubtedly, there will be constant trends and fashions that will alter the colour and shapes of these bags. There will also be a constant renewal of the secondary functions (or gimmicks) associated with their evolution. It also seems certain that the more conservative buyers will always demand a quantity of the older generation bags that have been in existence for some time now.

The above mentioned projections were fairly obvious, but what other developments can we predict? In the video camera industry in the past with the palmcorder and especially when you look at what products will be appearing in the next year or two, miniaturisation will be the greatest of selling points. As in the past, the bag manufacturers will not be very far behind. Presumably, there will be suitably small bags to cater for this market.

The development of new products will undoubtedly mean the appearance of new bags to cater for them. This is evident in both photography and (increasingly) other industries. An example of this is the most recent appearance of shrouds, accessory bags and pouches for the protection and transportation of hand held computer games such as the Nintendo Gameboy.

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Chapter V

Epilogue

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Ine development of new products will undoubtedly mean7the appearance of new bags to cate, for them. This is evident in both photography and (ThoreasIngly) other industries. An example of this is the most recent appearance of anrouds, accessory bags and pouches to the profection and transportation of thand held computer games such as the Mintendo Gameboy. New materials and the ways of using them will undoubtedly alter the course of the development of the bags. However, it is anybody's guess as to how. I feel that improvements in shock absorbent materials may serve to decrease the size and weight of future bags (thus widening even further the scope of their uses).



Fig. 5.1.1. Cover for handheld computer game.

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b) Conclusion.

The importance of this thesis lies in the fact that it documents an industry at a particular stage in it's evolution by a person that was involved with it. These changes would otherwise have gone unrecorded.

The thesis records the development of camera protection from it's rudimentary beginnings through to today's highly complex industry with it's many diverse applications. It shows these different applications (such as the computer bag and palmcorder bags) and answers the questions of how and why they developed. For example it has shown how an opening arrives on the marketplace, how this is addressed by designers and manufacturers, how the product is developed, and finally how it is presented to the consumer.

The two case studies contained in the text show how a product should and should not be developed. These case studies demonstrate to us the correct way to design, manufacture and sell a camera accessory bag. The Hahnel Professional Bag was developed to recapture an area of the market that it had seemingly lost due to antiquate aesthetics. Unfortunately, the manufacturers never saw that the market itself had actually shifted. Instead of addressing the aesthetics of the unit the designers should have been re-examining the primary function of the bag. The real problem was located in the fact that proper research was never undertaken. The thesis demonstrates this problem and highlights how it should have been tackled by the inclusion of the second case study.

Although the development of a camera bag is a complex process, it should be remembered that the design process itself takes a similar path with most products. It could therefore be said that this thesis (by examining the design and manufacture of the case studies) has demonstrated the nature of the design process itself.

By documenting the growing technology that was created specifically for the camera industry, the thesis records how the use of this technology diversified into other fields of design such as bags for laptop computers and walkmans.

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The Importance of this inside lies in the fact that it documents an industry stal conticular stage in it's evolution by a person that was involved with it. These changes would otherwise have gone unrecorded.

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ey documenting the growing technology that was created specifically for the camera industry, the thesis records how the use of this isofinology diversified into other fields of design such as bags for factor computers and waikmans

The thesis traces the influence fashion has on an industry. Originally camera protection was meant to be purely functional, however, today some camera bags could be described as a fashion accessory designed to compliment an image that the user is trying to create. With the advent of the camera a new industry was created. The camera protection industry grew out of a necessity. Although this necessity still exists and is catered for by functional bags, this thesis has shown that there are many other influences, such as fashion, that have entered into the designer's mind, thus imposing on the industry levels of thought of far greater substance, that otherwise would never have been realised. These repercussions have effected the industry over the past years and will continue to do so for the foreseeable future. The thesis has proved this by documenting the history of camera protection from it's earliest days through to today's highly complex, purpose designed models. This has involved addressing the influence of fashion on the industry and examining the constant development of the use of technology by designers. The thesis has also examined how designers have catered for consumer needs, especially in the area of ergonomics, and it has shown the market reaction to these changes. By doing this the thesis can now foretell how the market will react to new products, thus, it has enabled the designer to speculate more accurately on tomorrow's products.

The thesis recorded the expansion and divergence in the amount, quality and purpose of these products. It also answers the questions of how, why and when this happened. This boom in the industry (especially in the last decade) was a fascinating time where a whole area of design has been born and now matured.

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The these traces the influence tashion has on an industry. Originally camera protection was meant to be purely functional however oday some camera bugs could be described as a tashion accessery. It a covert of the camera a new industry was created. The camera involved to moustry previout of a necessify! Affrough this necessify still events and is catered for by functional bags, this thesis has shown that if ore are many other influences, such as fashion, that have entered into graves and is catered for by functional bags, this thesis has shown that if ore are many other influences, such as fashion, that have entered into graves and we catered for by functional bags, this thesis has above that the designed's mind. This imposing on the industry levels of thought of ist commute to do so for the fore-seable tubins. The thesis has proved this by doriverships have attacted the industry over the past years and will involve a addressing the influence of fashion on the industry and the constance. The thesis has proved this has a designed to industry or complex, purpose designed models. This has the mough to taday is highly complex, purpose designed models. This has designed to the these has also examined how designers have extend to the material teaction to these changes. By doing this the thesis can now designed to speculate more accurately on the mough its intes enabled the formation the times accurately on the orders intos, it has enabled the

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Appendix A

The Processes and Technology Used in the Production of Today's Bags.

There are many considerations that a designer must make to produce a bag that is viable for today's marketplace. He must-

1) Remember to keep the interests of the consumer in mind. To do this he must-

- a) Design the bag so that it will be affordable.
- b) Make the bag comfortable to use and carry.
- c) Design the bag so that it's use will be as simple as possible.
- d) Include features to aid the user in his tasks.

2) Remember to keep the interests of the manufacturer in mind -

a) The use of proper materials combined with sensible devising of manufacturing methods will provide a finished product that is simple yet effective and more importantly will give the manufacturer a good return on his investment.

b) Be viable. Market research combined with careful design will produce a bag that will be attractive to the largest sector of the market.

3)Design the bag so that it functions. The bag must-

a) Protect it's contents from the dangers of rain (moisture), dust and shock damage.

b) Not break any of its catches or features causing the bag to fail and the contents to be damaged.

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Appendix B

Pages from the sketch book of the Hahnel Professional bag.











Appendix C

Pages from the sketch book of the Hahnel Palmcorder bag.























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Appendix D

Photographs of the Hahnel palmcorder bag.



Fig. 6.1.1 Exterior of Hahnel Palmcorder bag.



Fig. 6.1.2. Rear of Palmcorder Bag.





Fig. 6.1.3. Bag being dismantled.



Fig. 6.1.4. Bag dismantled and open to reveal contents.





Fig. 6.1.5. Hahnel Palmcorder Bag in use 1.



Fig. 6.1.6. Hahnel Palmcorder Bag in use 2.



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