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Toothbrushes: The Design, Marketing and Technology of of the Toothbrush.

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Table of Contents.

Section.	Page No.
Acknowledgements.	ii.
List of Plates.	iii.
Introduction.	1.
Chapter 1. The Design of the 'Ideal' Toothbrush.	8.
Chapter 2. The Use of Technology in the Development of Toothbrushes.	15.
Chapter 3. The Identity of the Toothbrush and the Role of the Designer in Their Creation.	37.
Chapter 4. The Role of Marketing in the 'Creation' of a Product.	55.
Conclusion.	67.
Bibliography.	73.
Appendix.	77



CONQUEROR

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CONCERN

List of Plates.

- | | |
|---------|--|
| Fig. 1 | The Production of Addis's First Brushes. |
| Fig. 2 | Wisdom Multituft. |
| Fig. 3 | Main features of a Brush. |
| Fig. 4 | Reach Interdental. |
| Fig. 5 | Reach Access. |
| Fig. 6 | Reach Control. |
| Fig. 7 | Mentadent P Ultra Professional. |
| Fig. 8 | Oral-B Indicator. |
| Fig. 9 | Colgate Precision. |
| Fig. 10 | Aquafresh Flex and Direct. |
| Fig. 11 | Squeje Aqua Tooth Polisher. |
| Fig. 12 | The Super brush. |
| Fig. 13 | Radius Brush. |
| Fig. 14 | Fibre Optic Brush Mechanism. |
| Fig. 15 | Sonex Ultra Sonic Toothbrush. |
| Fig. 16 | Braun/Oral-B Plaque Remover. |
| Fig. 17 | Aquafresh Flex. |
| Fig. 18 | Philippe Starck Floucaril Brush. |
| Fig. 19 | Philippe Starck Excalibur Toilet Brush. |
| Fig. 20 | Oral-B Squish Grip. |
| Fig. 21 | Various Swatch Watches. |

CONFIDENTIAL

- Fig. 22 Philippe Starck Floucaril Brush.
- Fig. 23 The Hook 2.
- Fig. 24 Gillette Sensor Razor.
- Fig. 25 Mentadent P Professional Range.
- Fig. 26 Aquafresh Product Packaging.
- Fig. 27 Mentadent P Product Packaging.
- Fig. 28 Various Companies Product Literature.
- Fig. 29 Oral-B Advertisement.
- Fig. 30 The Production of Addis's First Brushes.

CONQUEST

Introduction.

The development of the toothbrush began with the 'toothstick' as mentioned in the history of Buddhism, and is considered to have been used by Buddha in the year 500 BC. In the fifteenth century it was specified that such instruments should be made from the wood of Pine, Rosemary, or Juniper trees, and should be worked into thin pieces, rather broad at one end, and not sharp, but pointed at the other end.

Since then the toothbrush has come a long way, and as the bathroom, with the distinctive features of its fixtures and fittings, and our perceptions of personal hygiene developed, so too did the toothbrush. While there are obvious links between the development of the bathroom landscape, with its connotations of sterility and personalization, and the toothbrush, they are not as strong as one might imagine. The toothbrush is one of the few products, along with the razor and the toilet brush, which is an integral element of the bathroom, yet is not a true fixture. The result of this has been that the toothbrush has never quite integrated into the bathroom environment, and this awkwardness has lead the product to develop a unique identity, which while seeming alien in some respects, has intensified its impact on the bathroom.

It is only in the last twenty years however, that the toothbrush has really began to penetrate the average household and up until then its growth in popularity was very slow, which can be exemplified by the fact that in 1968 almost 40% of the British population had no natural teeth (Design, March 1993, p52-53). Today the story is very different as the toothbrush has become a recognised part of our everyday lives.

The darker side of this story is however, that while an increasing percentage of people use the toothbrush on a daily basis, it is more through necessity than desire. Rather than being a source of pleasure, the toothbrush seems to symbolise everything that is mundane and repetitive about our daily lives, and the act of brushing itself is, for the most part, completed in a lack lustre fashion. The functional characteristics of the toothbrush have also never appeared to satisfy users, and as a result, the toothbrush whilst being a very important product, would appear to be a very disappointing one. The improvement of both the function and the perception of the brush has formed the basis for much debate in the world of design, particularly in the last number of years, but the progress being made in this endeavour leads us to believe that the toothbrush is tending more towards the banal rather than bohemian.

But is the picture really all that bleak, and if so what action can, and is being taken to ensure that the future of the toothbrush is a more acknowledged one? These are just two of the questions which this thesis will pose in an attempt to gain a better understanding of what constitutes the 'ideal' toothbrush.

The definition of the word 'ideal' with respect to the toothbrush is an important in the context of this thesis, as it relates not only to basic function, but also to the users perception of functional requirements, and the interface between the user and the brush. It is with the definition of the ideal brush that the first chapter of this thesis finds its subject matter.

If however, we believe the word 'ideal' pertains to something more than just basic functional criteria, there is a great deal more to its definition

and achievement. The second chapter will examine the ability of technology to aid the development of a better toothbrush and will examine the success achieved from the emphasis placed on technological innovation by the leading brush manufacturers. However, is it possible for technology alone to sustain the rapidly changing expectations of the average user? As we approach the beginning of the 21st century our relationships with products is increasing in its intensity, and people are seeking out new experiences through products, if the same is true for the toothbrush, then it would appear that indeed, this is not the case, and so the role of aesthetics and semantics in the development of the 'ideal' toothbrush is of ever-increasing importance.

The third chapter of this thesis addresses the issue of the designers ability, using the tool of aesthetics, to give products meaning and personality, with which the user can relate, as the 'ideal toothbrush' is more a function of product perception rather than technical innovation. Often it is not possible for a product, particularly one as small as the toothbrush, to encapsulate and display clearly all the images which the users aspire to and so the respective companies must turn to other means of creating a total product and corporate identity which the user can buy into. The tool for that task is marketing, and when used effectively in combination with design and technology, it can be a very powerful one. The fourth and final chapter of the thesis will look at the role of marketing in the development of toothbrushes and will illustrate how it could be used to enhance the identity of the product by, making comparisons to products which have enjoyed huge market success such as the Gillette 'Sensor' razor.

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The end result of this thesis should illustrate, not only, the current state of the toothbrush as a product, but also the ability for it to develop into a product which is more interesting, and pleasurable to use, as when you have to use a product every day pleasure is a very important factor.

This thesis is the product of a period of research, during which a number of avenues, which contained information pertaining to the toothbrush and the general design issues raised in this thesis, were explored. The first of these was an examination of the basic functional requirements of the toothbrush, and the manner in which it is used by consumers. The relevant information was obtained through interviews with Jacques Lumbroso, a dental surgeon based in Nenagh County Tipperary, and Prof. Noel Claffey a Peridontologist working in Trinity College Dublin, as well as the Dental Health Foundation who supplied a good deal of literature on dental hygiene.. Both the Dental Health Foundation and the interviewees were extremely gratifying, and helped to establish an essential knowledge of the objects function, which could then be used as a basis for the critical examination of existing products.

A wide range of samples, clinical reports, and product literature was then collected from the various toothbrush manufacturers, including Reach, Oral-B, Denta Co., and Colgate. The products were then all tried, to establish a knowledge of their characteristics, with particular reference to their feel, performance, and look. They were then compared to each other on the basis of their performance in clinical testing, an area which was very well documented in journals such as The Journal of Clinical Dentistry, and The Journal of Clinical Peridontology, and finally, were examined in an effort to establish how

innovative the products were in their, use of new materials, technology, and development of dental hygiene practices.

Having gained a good understanding of the products and drawn conclusions on their functional characteristics, a slightly different approach was adopted in the next phase of their analysis. Essentially this approach was an examination of the broader aspects of toothbrush design, including ergonomics, aesthetics, corporate identity and product perception. However, gaining access to information on the aforementioned was considerably more difficult than had been anticipated. One of the more fruitful sources of information was an interview which was held with Caroline Townsend, the Marketing Director with Johnson & Johnson Ireland, who through her knowledge of the market and its products, provided many answers about the future development of the toothbrush, and the reason why its evolution has been such a tardy one.

An in-depth examination and analysis of books and articles dealing with the design of the toothbrush, product marketing, and more general design issues was also undertaken, a task which illustrated that the toothbrush is a product on which relatively little has been written. The majority of what has been written are bland critiques of new toothbrushes, and only constitute byte sized articles in design magazines, such as *Design*, *I.D.*, and *Domus*. The broader design issues which relate to the toothbrush as a product have yet to be raised in a substantial manner in any publication. In fact the only toothbrush whose design seems to have warranted significant commentary is the Floucaril brush by Philippe Starck, which appears in publications such as *Domus* and *De Noblet's*, *Industrial Design a Reflection of the Century*, in the context of Postmodernist

corporate



design, and design iconography. However, regardless of how influential the Starck toothbrush has been, its qualities are hardly indicative of those of the average toothbrush, which is sadly underrepresented in design texts.

Of far greater benefit to the progression of this thesis were more general books and articles on design, which examine the entire concept of a product, the interrelationship of marketing, aesthetics, technology, and product identity, under a common framework. Some of those which were most influential were Lorenz; *The Design Dimension*, Gorb; *Design Talks and Sparke*; *Design and Culture in the 20th Century*. These and other texts helped to develop an understanding of products and all their facets, which could then be applied to the toothbrush to illustrate how although it is a simple product it is one which should not be overlooked, as the issues addressed in its design are similar to those of any product be it design icon or utilitarian instrument.

The thesis which has resulted from this period of research has been designed to clarify the extremely clouded vision, held by design literature, of the toothbrush. It will be one of the few texts to make a critical examination of the design, technology, marketing, and consumer perception of toothbrushes, and will also hopefully raise peoples awareness of the toothbrush and inspire further investigation into, and documentation of, its future development.

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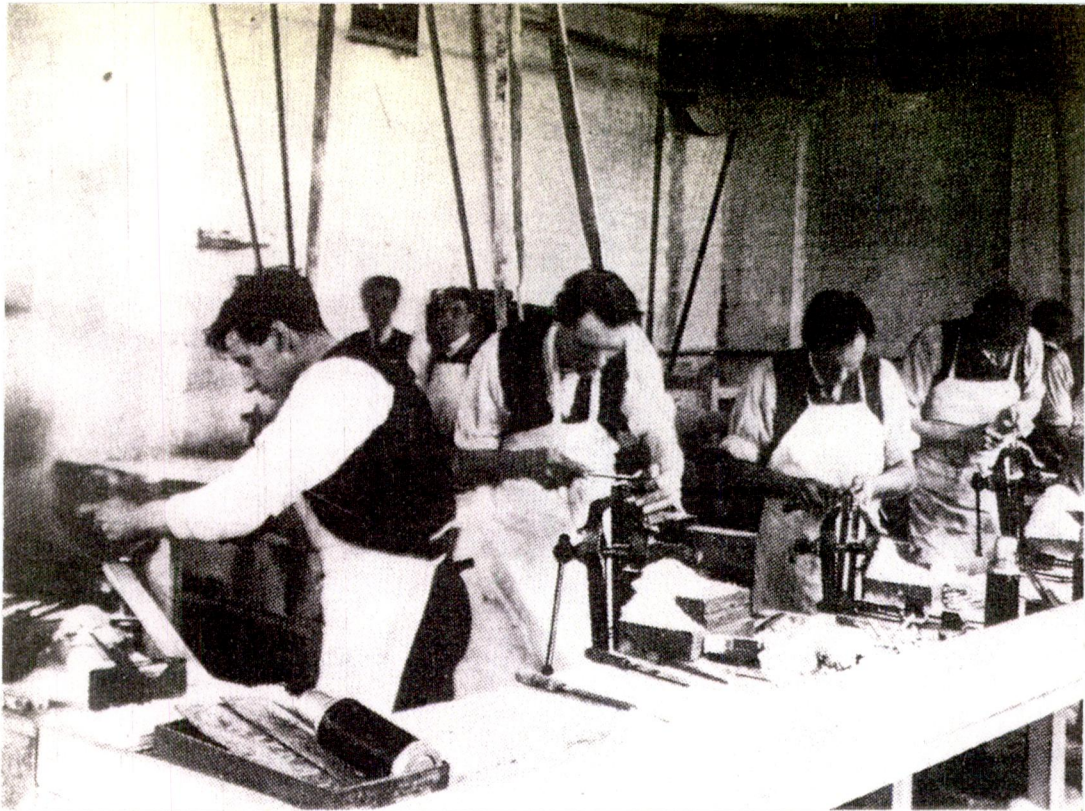


Fig. 1 The Production of Addis's First Brushes.

Chapter One. The Design of the 'Ideal' Toothbrush.

In 1780 William Addis, a stationer from London conceived, for his own personal use, the idea of the toothbrush as we perceive it today. He at once became aware of the commercial potential of his invention and quickly set about its manufacture and marketing, with the final toothbrushes being made from bone and horse hair. Addis's firm continued to develop steadily, along with the importance of dental hygiene throughout the 1900s and soon there brushes were being exported throughout most parts of the world (Baren, 1992, p. 118-119).

In 1927 the company began to manufacture their brush handles from moulded plastic rather than bone, in an attempt to keep ahead of a number of companies in both Europe and America which had emulated the Addis product, and in 1950 the company, determined to maintain and increase their market share, decided to endeavour to create the ideal toothbrush. To do this they enlisted the help of 14,000 dentists, consulting them about the handles length and shape, and the type and composition of the bristles (filaments) to be used, the result was the Wisdom Multituft. It is with this endeavour that this thesis finds its origin, as it poses the question, has the ideal toothbrush yet to be developed or was the Wisdom Multituft as close to the mark as any brush has been since? The answer to this question lies in an examination of the necessity of dental hygiene and evaluation of the expected functional performance of a toothbrush.

Dental plaque is a combination of saliva, food debris, and natural bacteria found in the mouth. It is constantly forming and adhering to all tooth surfaces, and is the major cause of tooth decay and gum disease. Tooth decay occurs when the bacteria in plaque react with the refined carbohydrate in your

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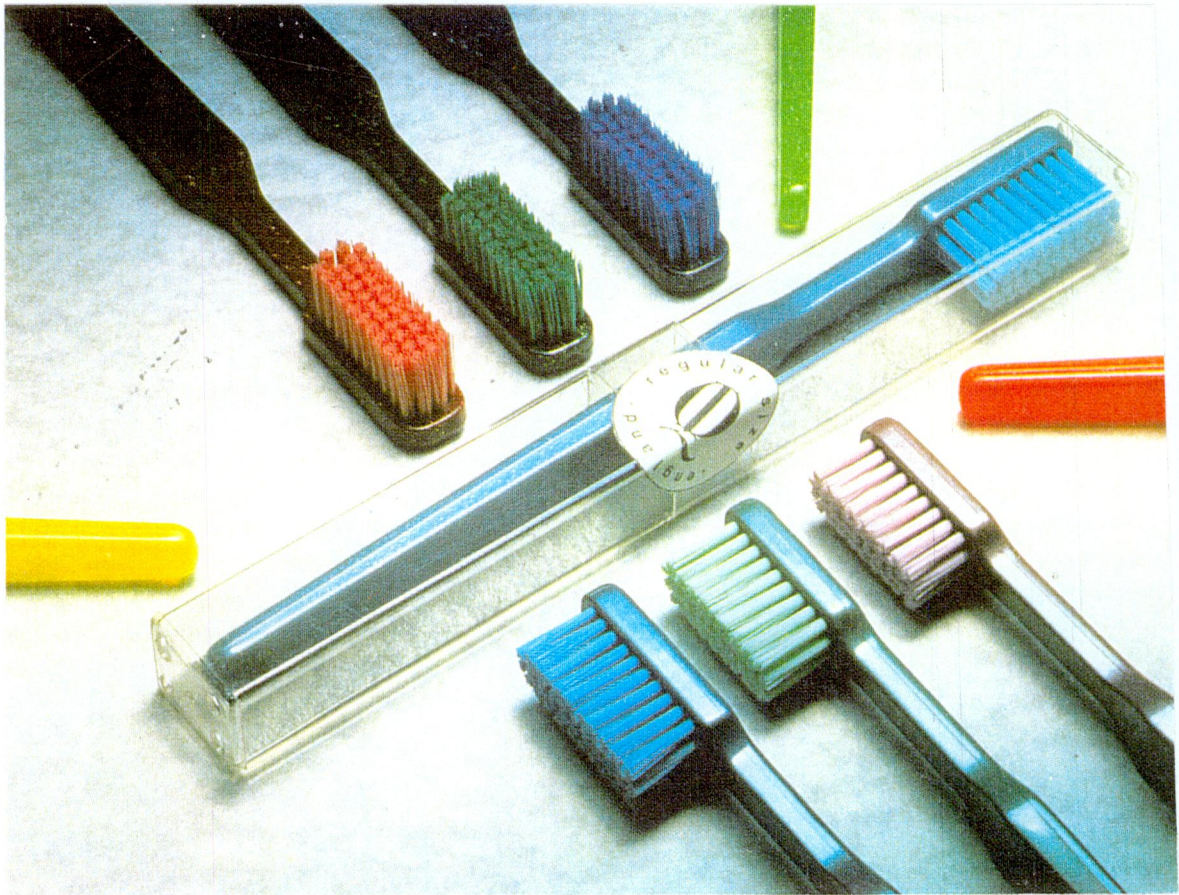


Fig. 2 Wisdom Multituft.



diet to form acids which then attack the enamel surface of your teeth. Small cavities are formed as a result and if these are not treated quickly they become larger and eventually the acids begin to destroy the softer dentine (inner layer) of the tooth.

Gum disease on the other hand develops when plaque is allowed to grow undisturbed on tooth surfaces, which will causes inflammation of the gums, and is the initial stage of gum disease. The use of a toothbrush is important as an element in a complete dental hygiene routine, and combined with toothpaste is the most frequently used tool in the battle against gum disease. Its primary role is the effective removal of bacteria and food residues from the surface of the teeth, the gums, and in particular the Givinal margin (gum line), which is the most significant area for plaque development.

The concept of brushing, while seeming quite simple in principle is complicated by the fact that companies are simply producing a tool for brushing, the use of which is unsupervised and ineffective, due to a combination by many users, of the wrong brush type and an incorrect brushing technique. Therefore the underlying criteria for the designer of a tooth brush is, that they design a tool which will encourage the user to brush as frequently and as effectively as possible.

There are three distinct features of the common brush, the design of which will determine the brushes performance.

The brush head:

This the platform into which the filaments are rooted, and is invariably available in two sizes, full or compact, which have been developed to maximise the ease with which the brush accesses the teeth. It must be

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Fig. 3 The Main Features of a Toothbrush.

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capable of being twisted and pivoted in the confined spaces at the back of the mouth in order to reach and clean effectively the teeth and gums in that region. It should also be shaped to prevent any accidental damage of the cheeks and gums with which it inevitably comes in contact during brushing.

The neck and handle:

The neck of the brush should be slim enough to allow the brush to reach the teeth at the rear of the mouth comfortably and without obstruction. The grip should allow the user be they left or right handed to hold the brush comfortably allowing, the position of the hand to be changed easily, and the brush to be twisted to gain access to all the teeth surfaces. However, the most important factor is the angle of the neck, which must allow the brush to reach over the teeth to prevent collision during brushing, and must also enable maximum access to the teeth with minimum movement of the brush handle.

The bristles:

The bristles, which complete the cleaning, should be available in a variety of packing densities and strengths to allow the user to choose the combination which is best suited to their own teeth and gums. Bristle technology has developed significantly and now offers rounded bristle ends, micro textures for the enhancement of the cleaning surface, and varying lengths and contours to clean between teeth, all of which are part of a complete range developed to provide bristles suitable for teeth and gums at all stages of development.

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If we consider the criteria outlined previously to be a prerequisite of the ideal toothbrush, then the majority of products on the market would be highly successful in their endeavours. Indeed the simple plastic brushes of Addis's 1950s range could prove to be a suitable rival to some of today's tooth brush manufacturers. The truth of the matter is however, that while toothbrush designs have developed to fulfil the criteria of a functionally efficient tool, there has also been a development in the manufacturers knowledge of the users brushing skills and patterns, and this has revealed that there is significant room for development of brushes which help counteract the lack of skill, and the promote dental hygiene awareness, on the part of the user. Therefore Addis's concept of the ideal brush no longer really applies, and so has been replaced with a more developed ideal.

The brief of a toothbrush designer is for the most part a focused one, in that there is an easily identifiable pattern of development for the teeth during the growth of a human, a pattern which is not likely to change dramatically over the next few decades. There is also likely to be no change in the requirements for cleaning teeth effectively, and while the process has come to be considered a mundane task of every day life, the importance of completing this task effectively is being made aware to more and more people. Taking all these factors into considerations, along with the time and pace with which the toothbrush has developed, it does not seem completely unfeasible that the ideal toothbrush, one which functions effectively as a tool without depending on the skills of the user, be developed. The obvious question in relation to this is however, why has this not happened. The next chapter will attempt to answer this question by examining the present and past developments of the toothbrush.

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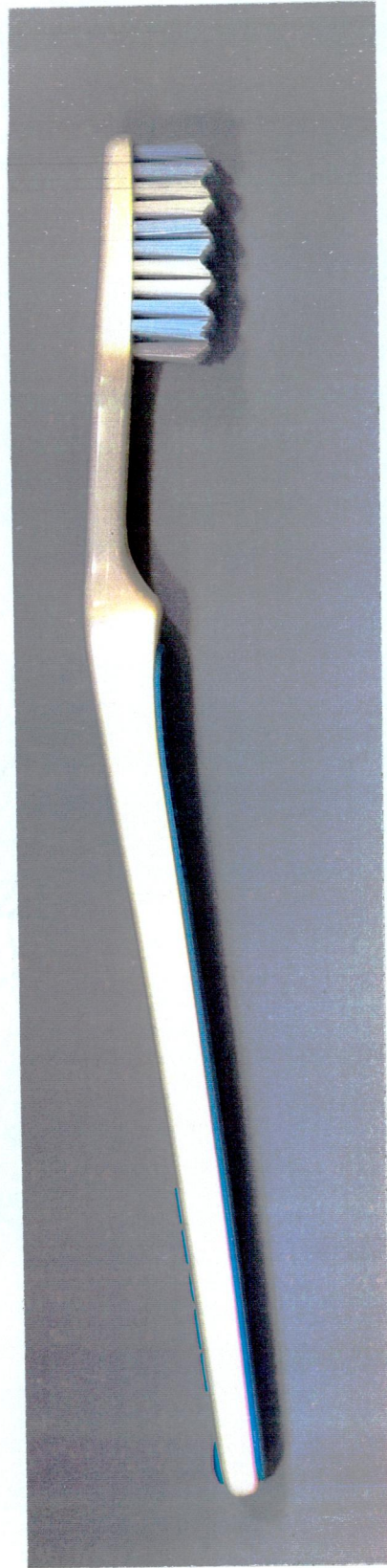
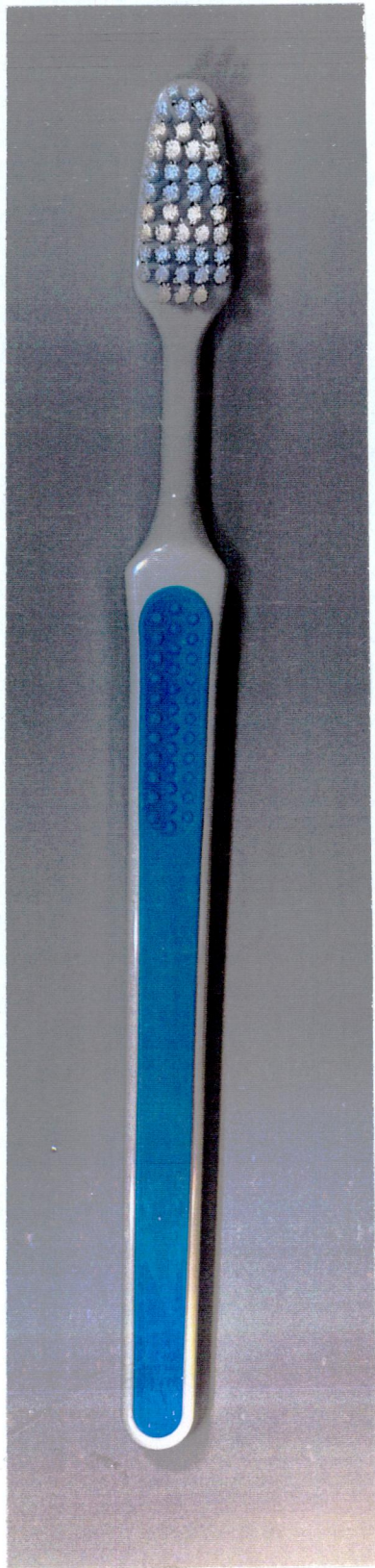


Fig. 4 Reach Interdental.



Chapter Two. The Use of Technology in the Development of Toothbrushes.

While the toothbrush has been developing at a slow but steady rate since the influential range produced by Addis in the 1950s it is only in the last two decades that the consumer has expressed an increased interest in dental hygiene. Two of the most significant reasons for this are, firstly, the dramatic increase in the cost of dental work, and secondly the increased influence of the media on our perception of personal grooming. As a result there has been a significant increase in the development of dental hygiene products and the quest for the ideal brush design has enjoyed renewed interest.

As mentioned previously, manufacturers have for a considerable time been aware of the stumbling block of this objective, that being the user, and the continued misuse of the toothbrush, resulting in over brushing , incorrect brush choice, and poor technique, as well as the fact that the users only change their brush every eight months on average, despite recommendations from dentists to replace brushes every three months. These problems have been converted by companies into significant market opportunities and a vehicle for product differentiation, and have resulted in a stream of new products onto the market, all of which claim technological innovation, and superiority over any other product currently available. One of the first companies to develop this ethos was Oral-B who developed a brush with a more rounded head and longer handle to create an ergonomic feel for the user. More recent but similar products include the new range of brushes from Reach, namely, the Interdental, Access, and the Control. What is interesting about this range however, is that although each brush is supposedly unique in its development, technology, and performance,

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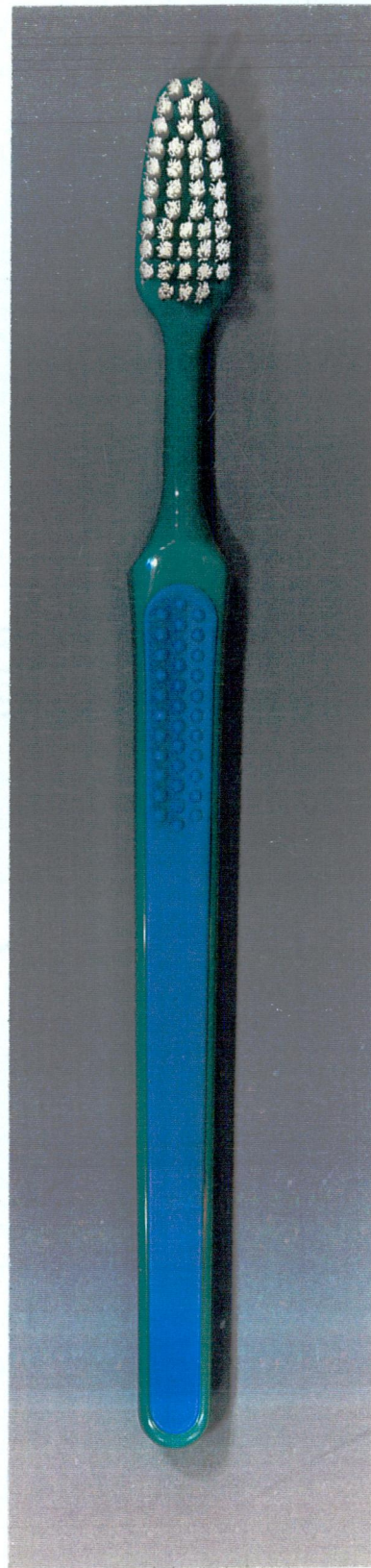
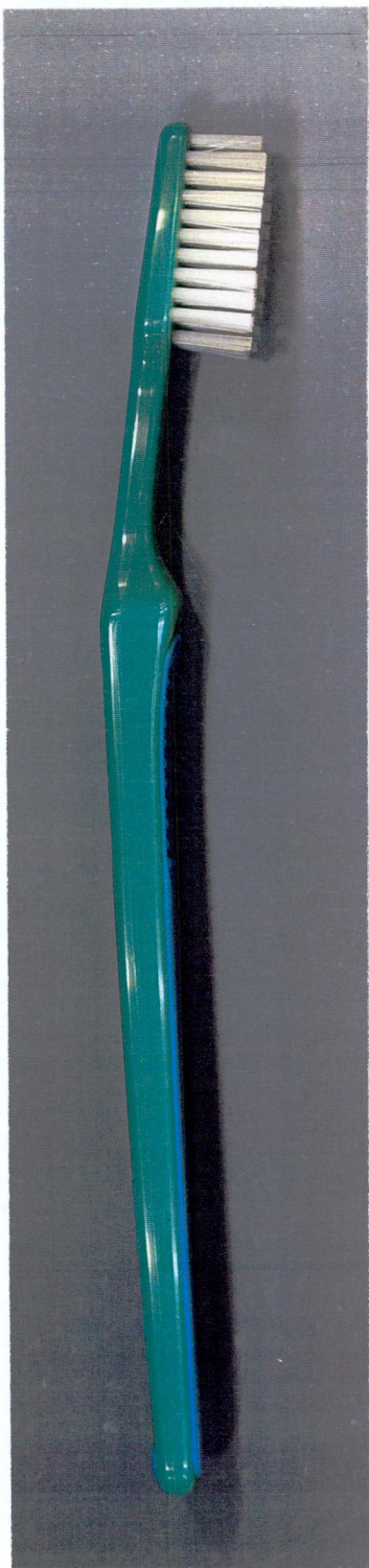
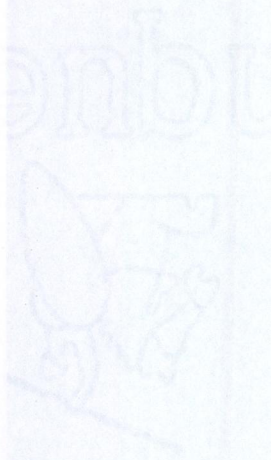


Fig. 5 Reach Access.



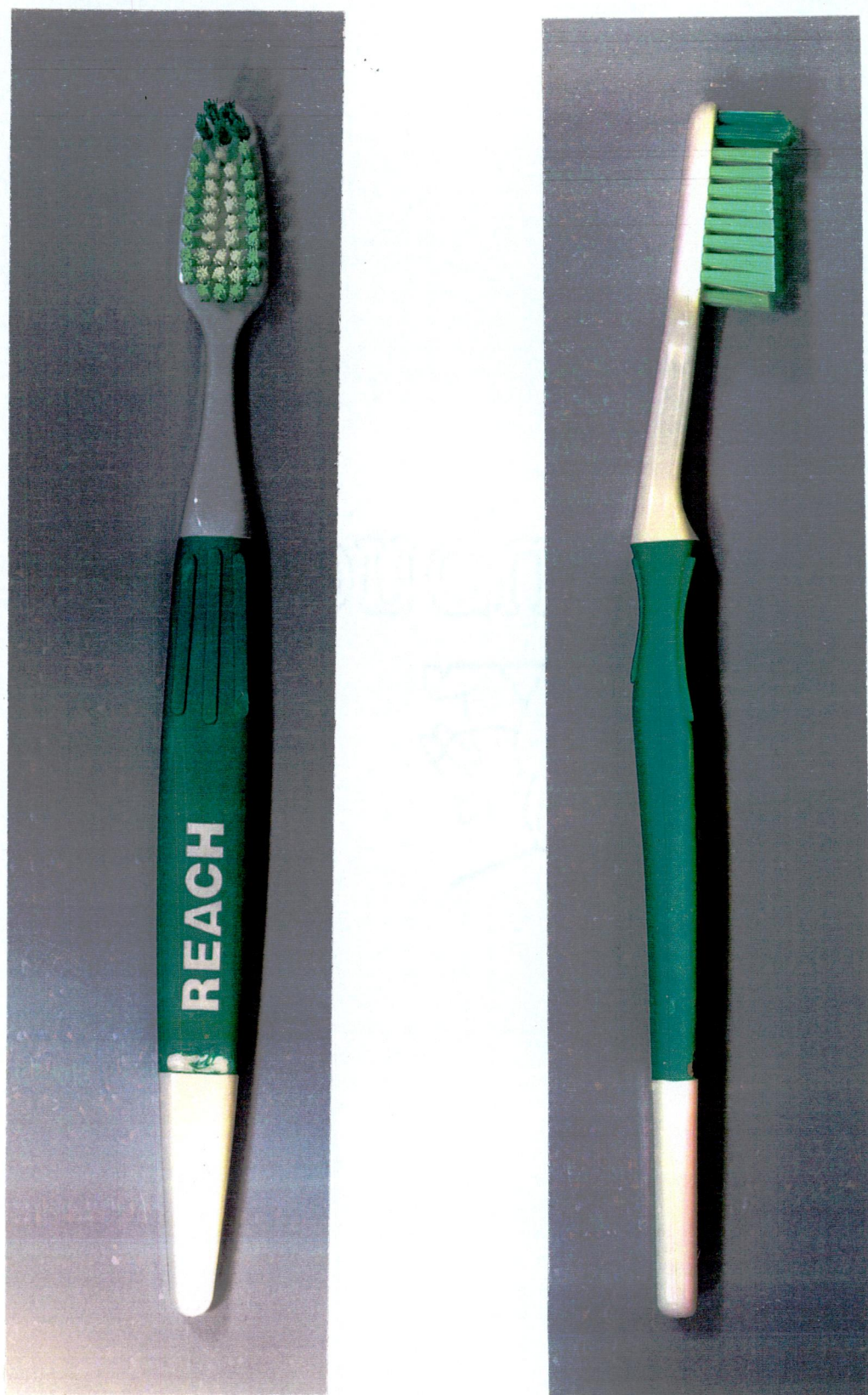


Fig. 6 Reach Control.



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and may seem vaguely unique in appearance, they all make the same basic product claims;

The Access:

1. 'The longer pointed bristle tip is designed to reach around the back of teeth and further between teeth for better plaque removal'.
2. 'Bi-level bristles clean tooth surfaces as well as along the gum line.'
3. 'Polished and round end bristles help protect gums and tooth enamel'.

(Reach, Product Packaging, 1996)

The Interdental:

1. 'Special wave bristles reach between teeth where plaque builds up'.
2. 'Advanced design non slip handle for superior grip and control'.
3. 'Angled handle and tapered head to reach even back teeth'.

(Reach, Product Packaging, 1996)

The Control:

1. 'Angled handle and tapered head to reach even back teeth'.
2. Advanced design non slip handle for superior grip and control'.
3. Two levels of end rounded bristles ensure gum protection and effective cleaning.

(Reach, Product Packaging, 1996)

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However, what is perhaps even more interesting is that, not alone are these technological or design advancements not unique to each of the brushes, if the range is compared to some of the brushes produced by the other market leaders such as Mentadent P's Ultra Professional, which is

‘a unique design combining elegance and high quality performance’

(Mentadent P, Product packaging, 1996).

the products appear virtually identical in there performance claims, a finding which would appear to be equally true for the majority of the leading brush manufacturers. What quickly becomes clear as one makes an examination of the various brushes on the supermarket shelves is that, for the most part, they posses few innovative features which would prove them worthy of being described as an ideal brush.

On occasion however, the various companies produce a brush, that while far from solving the major problems of brush design, does address them in some manner. Examples of this can be seen in brushes such a Oral-B's Indicator, which features a blue band of filaments in the middle of the brush which gradually fade from the top down as the brush wears out. When the blue has faded half way down the filaments, a process which takes approximately three months, it is time to purchase a replacement.

The Colgate Precision is another example, with its three bristle system. Angled outer bristles aid the removal of plaque from the gum line, short inner bristles clean the surface of the tooth, while the long centre bristles are designed to reach between teeth. While these features do improve the performance of the brush to some extent, they are more a process of design

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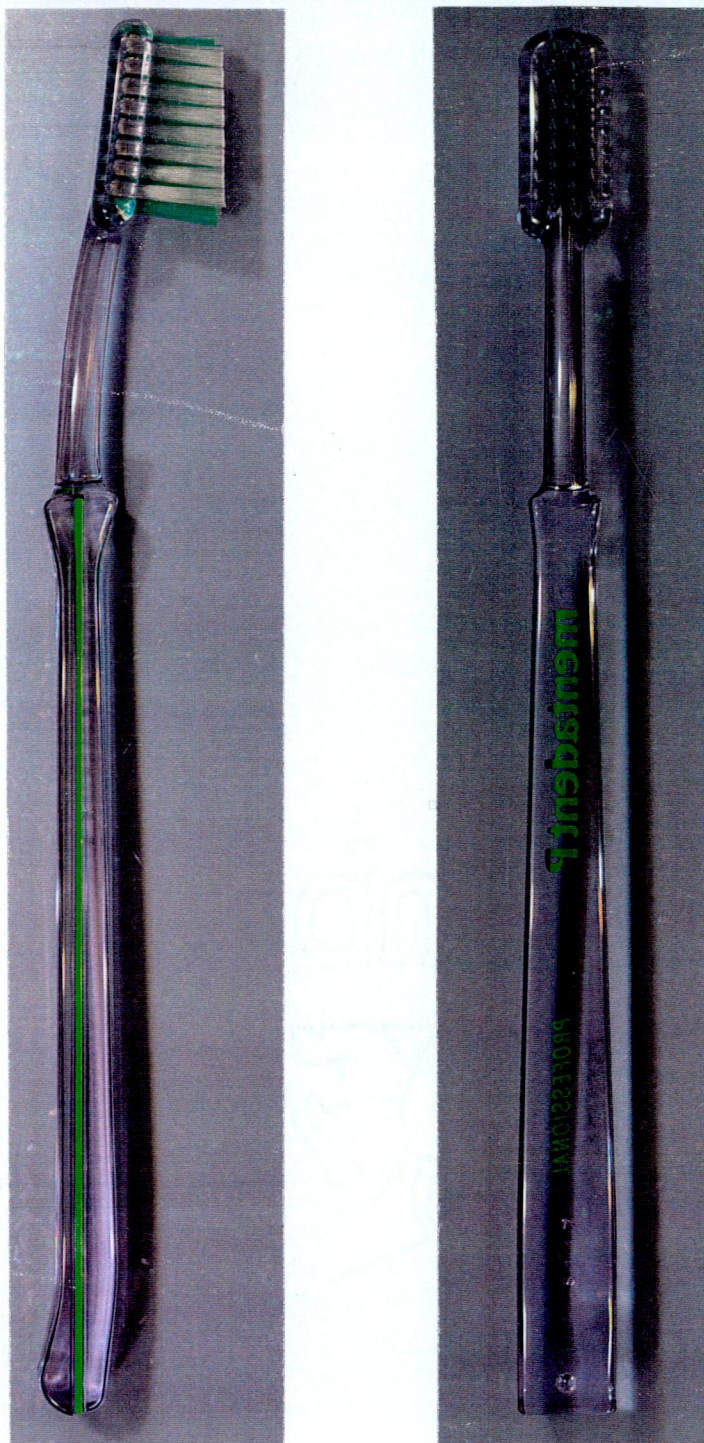


Fig. 7 Mentadent P Ultra Professional.



Fig. 8 Oral-B Indicator.



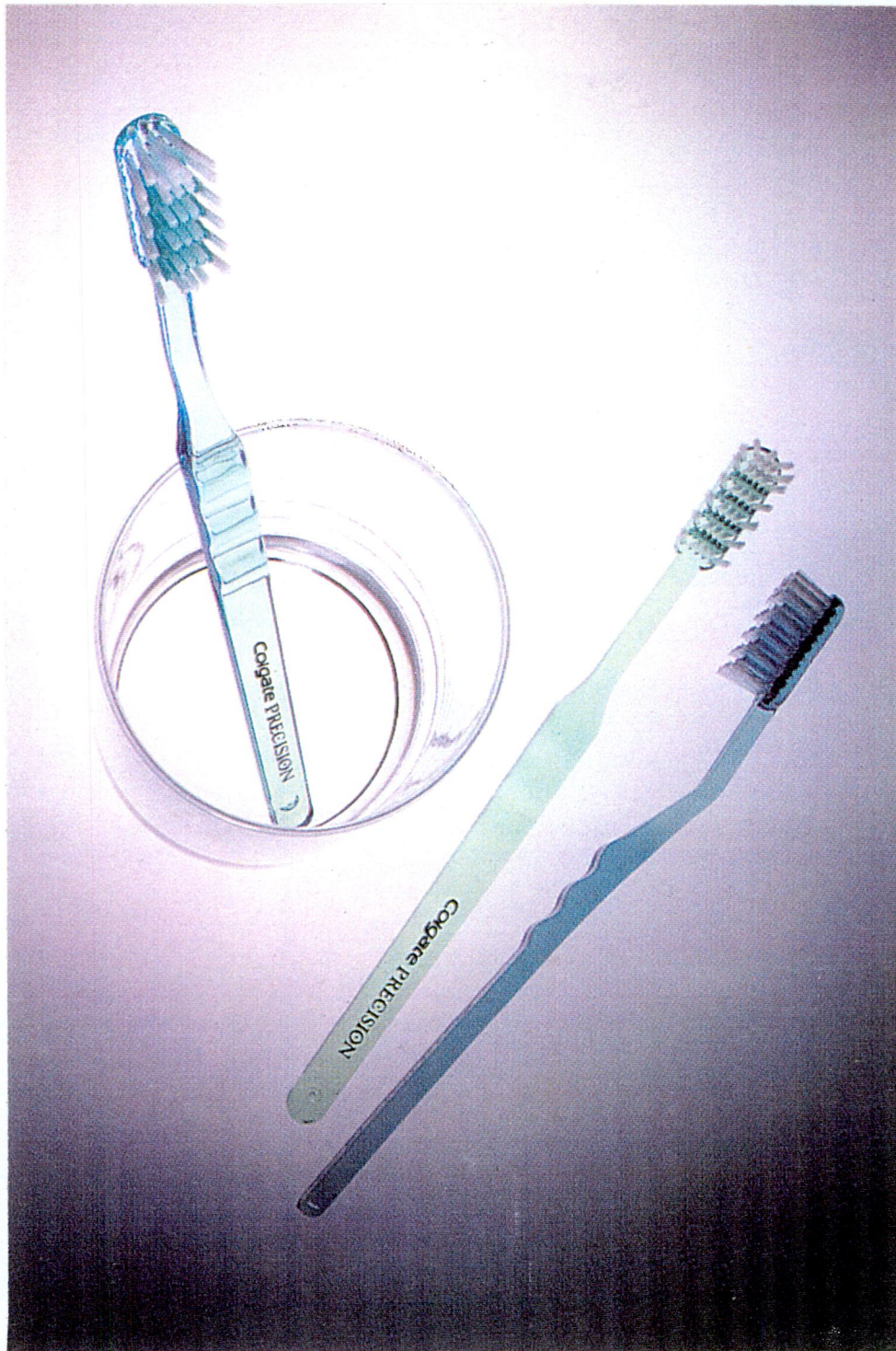


Fig. 9 Colgate Precision.



refinement, and as a result tend to be viewed as gimmicks used for the recreation of old products, rather than legitimate innovations developed to tackle the fundamental problems of brush design.

Such features are scattered about a number of products on the market and while the development of a brush incorporating a number of these features may have potential effect, the patenting of product features by the various companies renders this impossible.

It is this type of design refinement which is being undertaken by the majority of market contenders, such as Oral- B, Jordan, Reach, and Colgate, all of which are companies with the finance and resources to undertake the most in-depth research into the future of manual brush design, and its technology. However, if such research is being undertaken it is not manifesting itself clearly in any new or innovative product concepts. Is this a possible indication that a pinnacle in the design of the toothbrush has been reached, a point where designers have accepted the gap between the tool and the user is one which cannot be bridged, and where minor design refinement and gimmickry is the only means of, satisfying consumer desires, and achieving product differentiation. Perhaps however, what has been witnessed instead, is a growing stagnation in the development of products by the major brush manufacturers, as they rest in the knowledge that, the toothbrush is a necessity product, and sales will remain steady as long as companies can retain their share of the supermarket shelf, in a market dominated by a few companies whose development strategy is formed by keeping pace with there known competitors.

Such scenarios were common place, particularly in the consumer electronics sector, throughout the 1970s. Companies became over dependant on the development and sale of cheap technology, presented in poorly designed products, and as consumers desires and product expectations changed, they found themselves unable to respond, as they had failed to use design to enable the creation of fresh product concepts and visions for future products, which would be suited to the changing attitudes of the consumer. The Japanese seized this market opportunity and with their fresh approach to design, technological innovation, and marketing, quickly achieved market domination, a move which resulted in the downfall of many of their western competitors.

The answer as to which picture seems more accurate has become apparent over the last three or four years with the development of a variety of new toothbrush designs, from a number of the smaller companies around the world, who see the potential for product and market development and are relentless in their efforts to capitalise on it.

One such company is SmithKline Beecham, who like their Japanese predecessors have recognised, this significant market opportunity, and potential for the development of a quality toothbrush, and have sized it wholeheartedly. The result of this has been the Aquafresh Flex and Direct. The products innovative features include a flexible neck which is unique in its design in that it works in harmony with the users brushing style. The neck has a Penila (rubber like material) spine running along it, which absorbs any excess pressure which the user may apply, thus maximising on the cleaning effect, whilst reducing the risk of over brushing, which can lead to severe receding of the gums in the



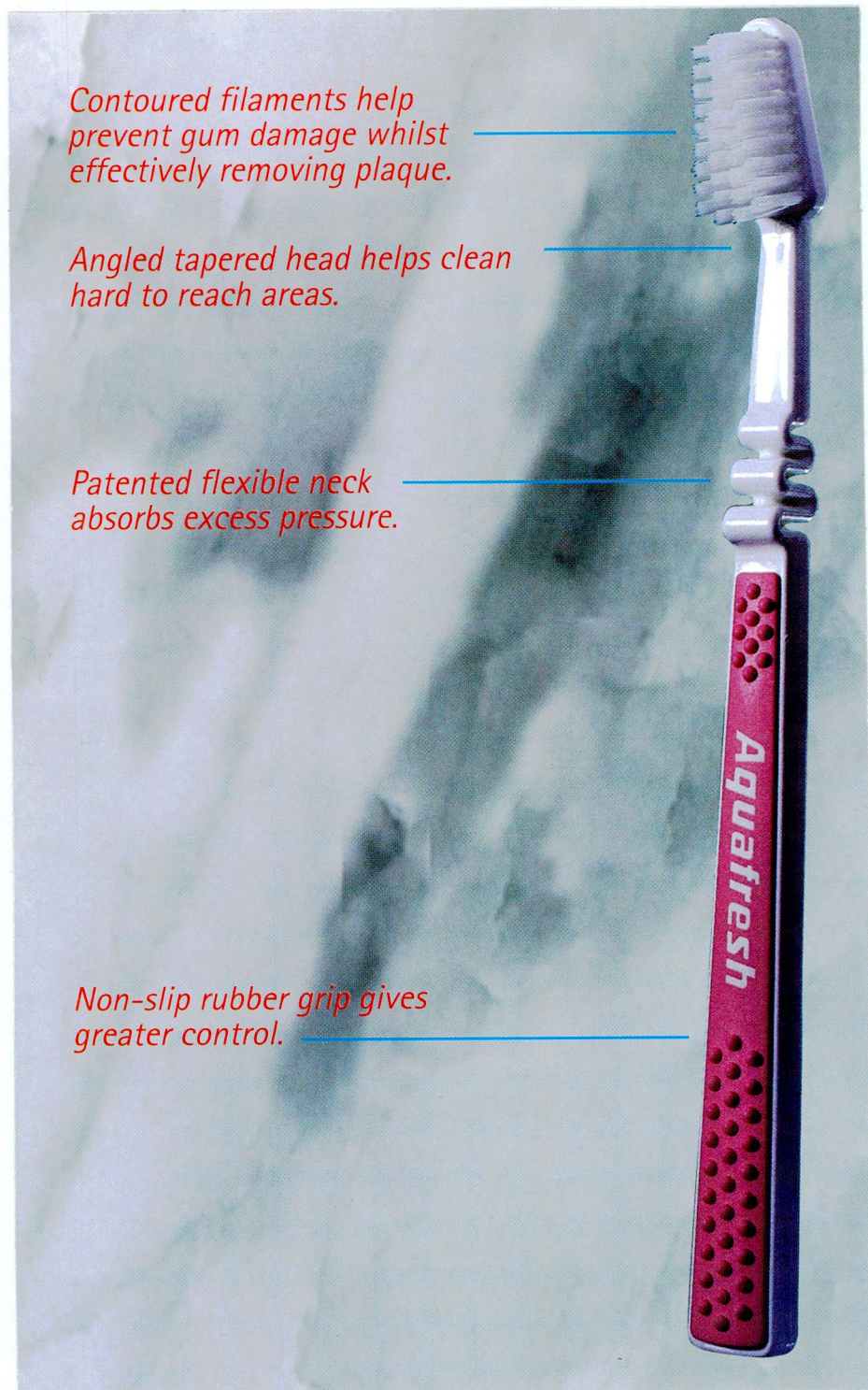


Fig. 10 Aquafresh Flex and Direct.

long term. The head of the brush is also attached to a flexible Penila mounting which can be moved as you brush to reach and clean areas in the mouth which many other brushes are unable to access.

The brush was also the first of its kind to feature the use of double shot injection moulding, which is exploited to supply, as well as the features outlined above, a non slip rubber grip on the handle of the brush, which provides the user with a very tactile surface to hold, a feature that has since been adapted by many of its leading competitors. These innovative features are a dramatic development of the toothbrush and have tackled head on the growing problem of over brushing.

SmithKline Beecham have used their already well developed muscle in the market place to get the brush a good deal of shelf space and advertisement, thus helping the product on its road to success. Consumers were instantly attracted to the products innovative features which seemed to legitimise themselves in the very aesthetics of the brush, and clearly represented a new direction in brush design. These first impressions were supported by the products performance, which proved in clinical trials to be significantly better than some of the markets leading brushes, including the Oral -B 40. It was the consumers who, no longer drawn to products based on gadgetry, helped the Flex and Direct quickly become one of the top selling brushes on the European market, and to pull the laurels from beneath some of their leading competitors with their innovative blend of design, technology, and marketing. More importantly however it illustrated that there are a great deal of innovative solutions to the underlying problems of brush design, and that what is lacking is not the innovations but the ability of the market leaders to use innovation

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to create effective concepts for the future directions of brush design. While this statement may appear quite sweeping, based on the strength of one product, in its judgement of the leading brush manufacturers, there is more than sufficient evidence available to cloud our vision of these companies if we look at the products produced by a hand full of the newcomers to the world of toothbrush manufacture. The limited exposure these companies receive is due more to their inability to penetrate what is an extremely tight knit market, rather than the strength of their products, which as a result seem to surface in only a limited number of retail outlets.

One such product is the Aqua Tooth Polisher, which has recently been developed by the American company Squeje. The brush is designed to accommodate the needs of users with a full range of physical abilities, and the design of the handle promotes the user to hold the brush at the recommended forty five degrees to the surface of the tooth. Its bristles, however, are its most interesting feature, which are made from a rubber like material, and are designed to encourage a more gentle cleaning action and massage of the gums. Functional prototypes of the brush have lasted almost three years which results in the production of less waste and tackles the issue of users being reluctant to dispose of old and worn out brushes because, as normal brushes have such a short life span.

The Aqua Tooth Polisher is a good example of the exciting approach a small number of companies are adopting with regard to solving the problems of the manual toothbrush, and the innovative use of new materials and technologies in the design of the brush deserves a great deal of credit. Squeje are one of the few companies to capitalise on the evolution of new materials in an

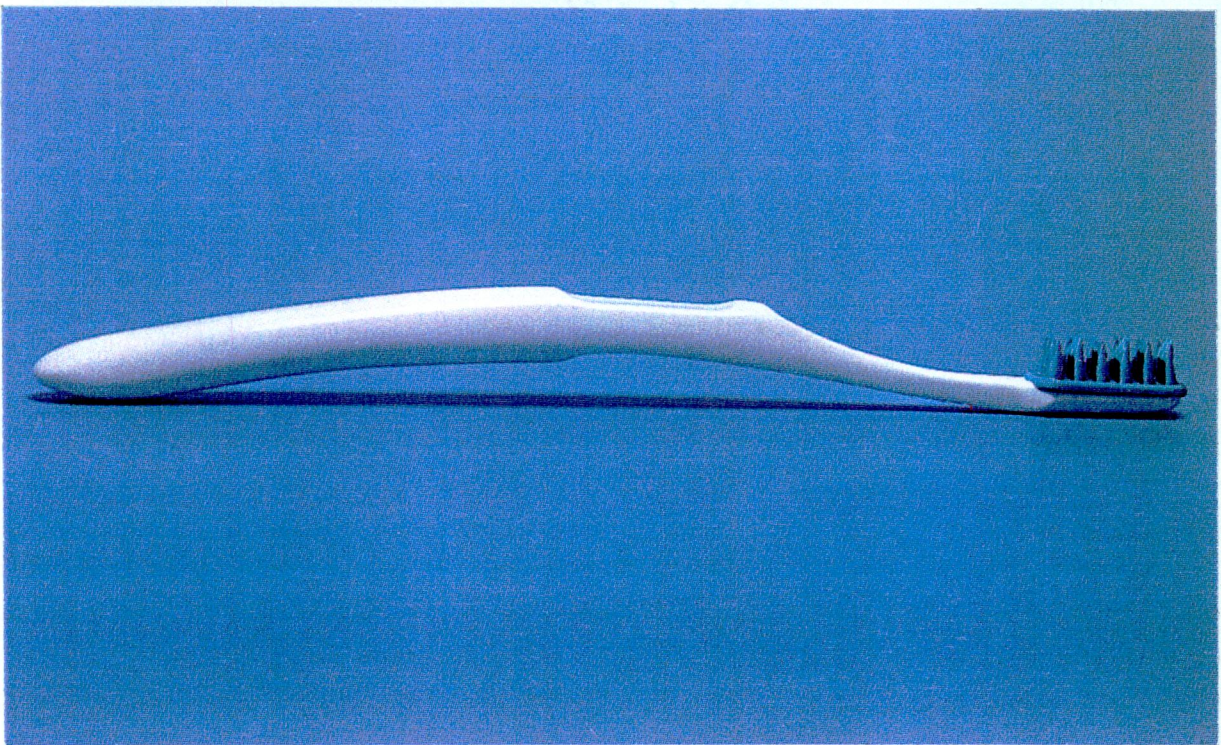
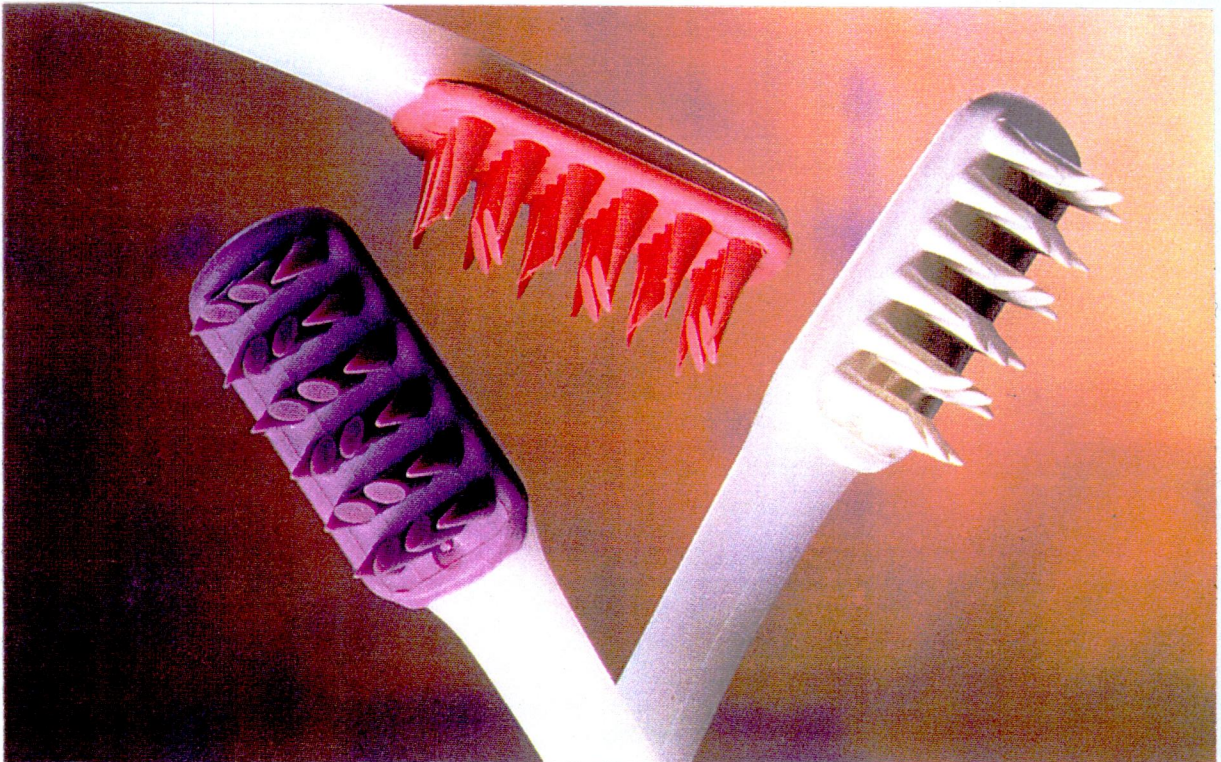


Fig. 11 Squeje Aqua Tooth Polisher.



attempt to expand the developmental and conceptual horizons of the toothbrush, a strategy which has sadly been ignored by many of their counterparts.

However, the toothbrush is not the only product is not the only product to have its development stunted by the failure of designers and manufacturers to keep up to speed with, and exploit the properties offered by new materials, and products in every area from domestic to medical have suffered due to a common lack of knowledge and understanding. With the aid of products such as the Tooth Polisher, as well as the development of new cultural directions, such as virtual and cyber culture, which are exploiting many new materials and technologies, this is beginning to change.

Another admirable characteristic of the Tooth Polisher is the manner in which it has seized the opportunities, brought on by the use of new technologies, to rethink the style and aesthetic of the product. This approach has also been taken by the designers of the Radius, a new brush which, having made a complete re-examination of the functional and ergonomic characteristics of the toothbrush, has in the process also reinterpreted the toothbrushes aesthetic. However, this again is a tactic seldom emulated in the design or manufacture other toothbrush, or the majority of other products for that matter. An example of this can be seen by looking at the evolution of the microwave, which still resembles a 1960s Mini Oven, and hardly reflects the fact that it was and to some still is a completely new form of technology.

A brush which attempts to remedy the problem of users not brushing for long enough, and neglecting to clean the back surfaces of the teeth is the Super brush.

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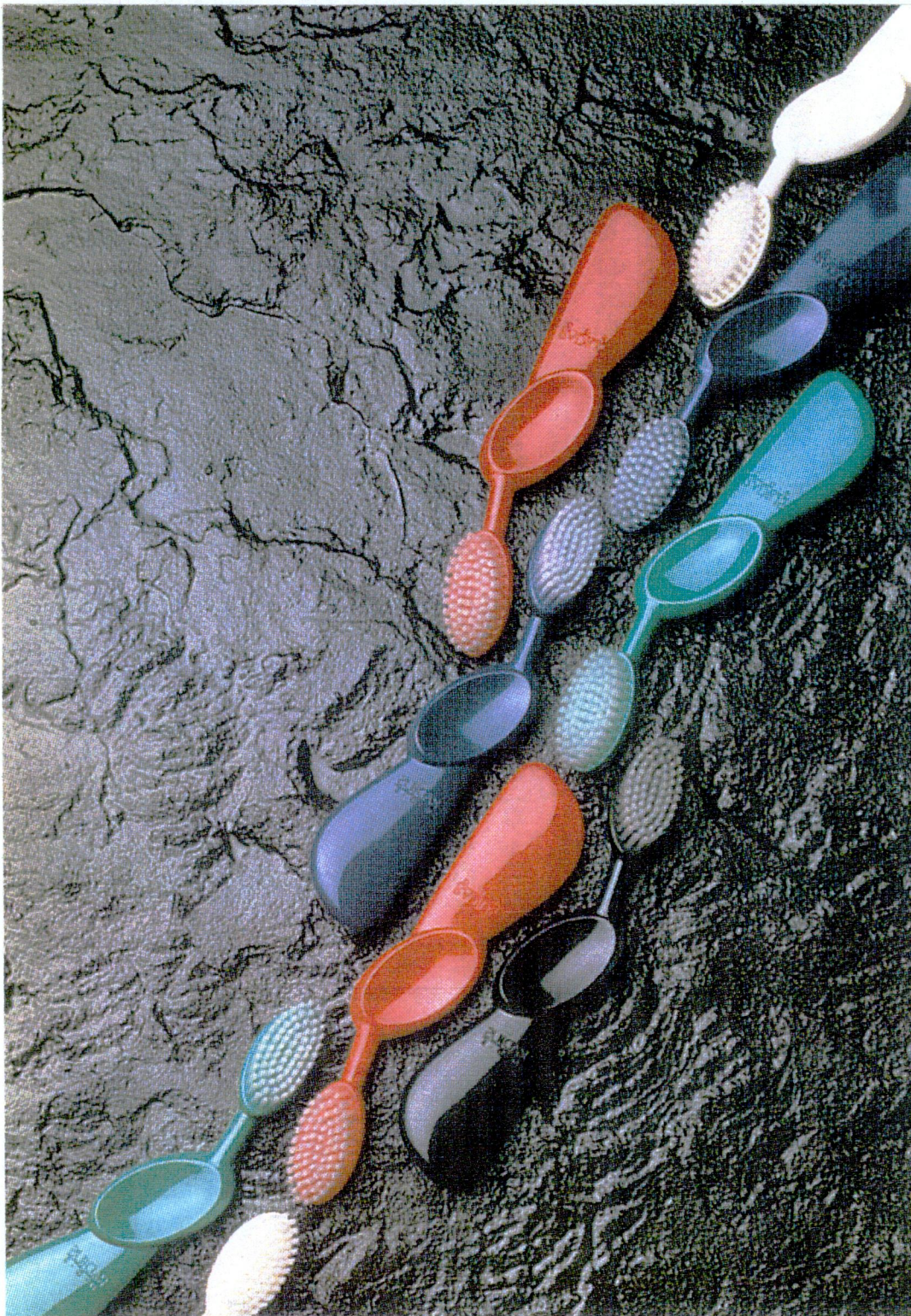
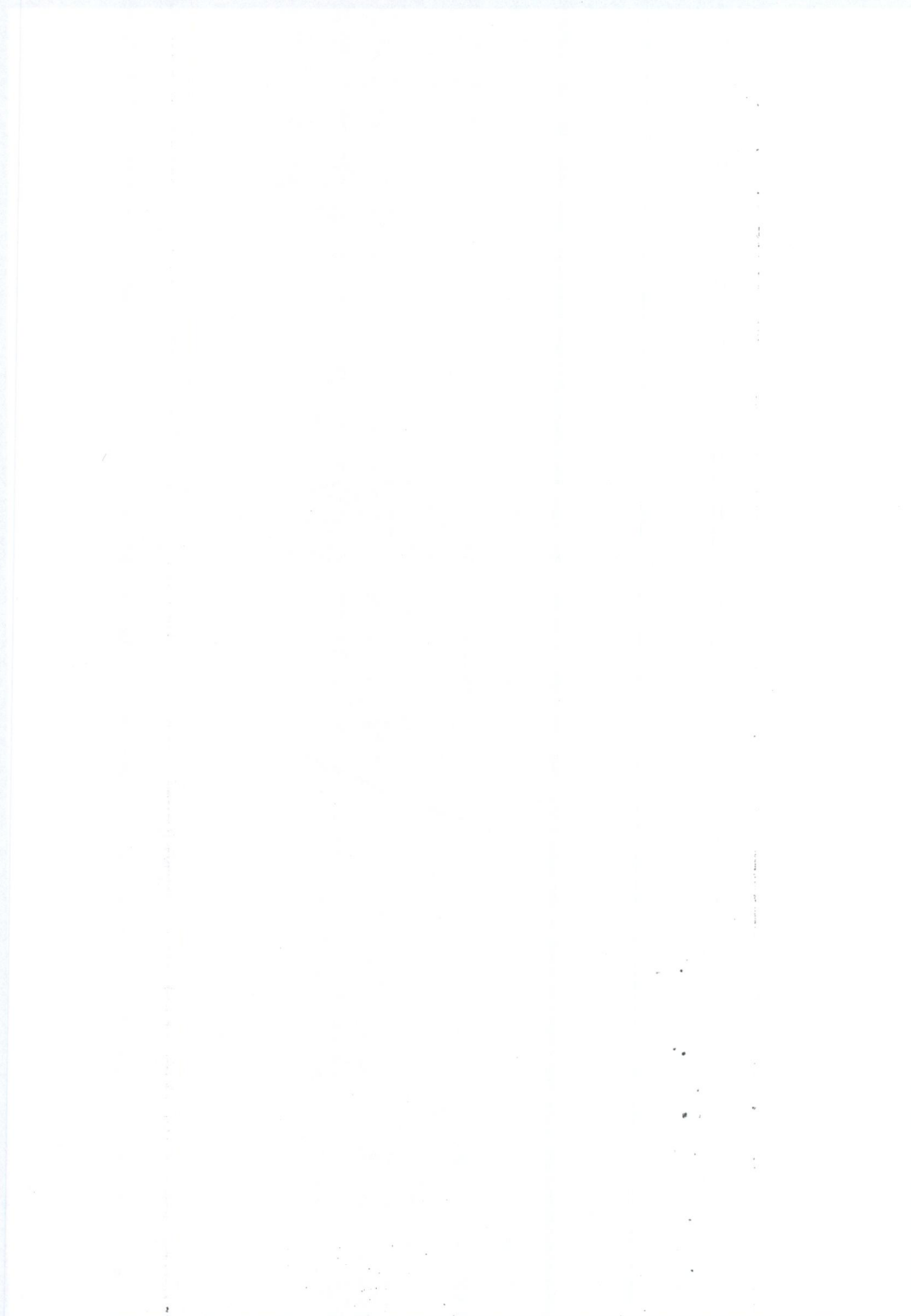


Fig. 12 The Radius.





◆ *Unique triple heads*

◆ *Cleans three surfaces
at the same time*

◆ *User friendly*

◆ *Effective cleaning of
difficult to reach areas*

Fig. 13 Superbrush.



It is ideal for the lazy brush user as it has three sets of filaments, which clean the three surfaces of the tooth simultaneously.

While these products certainly represent a major development in brush design, they also give good cause to question the extent to which the design and product development are being manipulated by there market leading counterparts, but more importantly they illustrate that the ideal brush doesn't seem to be coming all that much nearer to its development, with no one manual brush encompassing a total design solution to counter act the faults of the user.

The manual toothbrush has always received the most attention in terms of development, and its advancement has been a gradual but steady one. The fact that it is the accepted icon for dental hygiene has boosted its lasting power, but it is possible that the ideal tooth brush may develop from a technology and direction dramatically different to that of the manual toothbrush. The electric toothbrush while not having enjoyed a great deal of success since its introduction is also currently undergoing a period of development, which is seeing the introduction of ultra sonic and even fibre optic technologies. A brush currently being developed at London's Imperial College uses optic fibres instead of bristles.

A laser beam runs from a tiny source in the handle to the top of the fibre optic bristles. This technology is combined with a special toothpaste containing a light sensitive chemical, a photo sensitiser. The paste sticks to the harmful bacteria cells on the tooth surface, and when this combines with the light from the laser emitting brush, it kills them, without causing any damage to the teeth or gums. However, while this brush is exceptionally innovative, its success in the near future is likely to be short lived, as was that of brushes incorporating ultra sonic technology.

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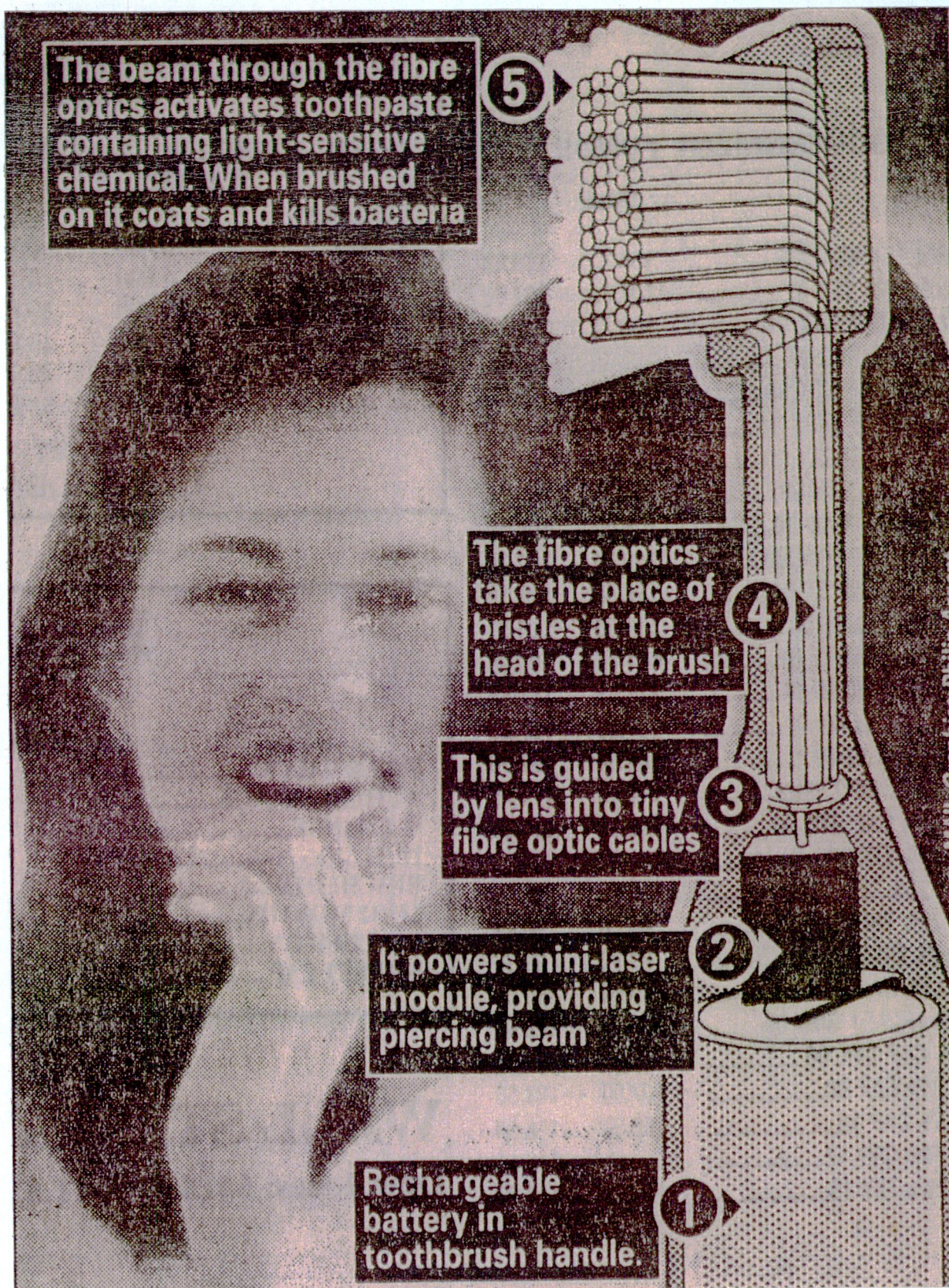


Fig. 14 Fibre Optic Brush Mechanism.



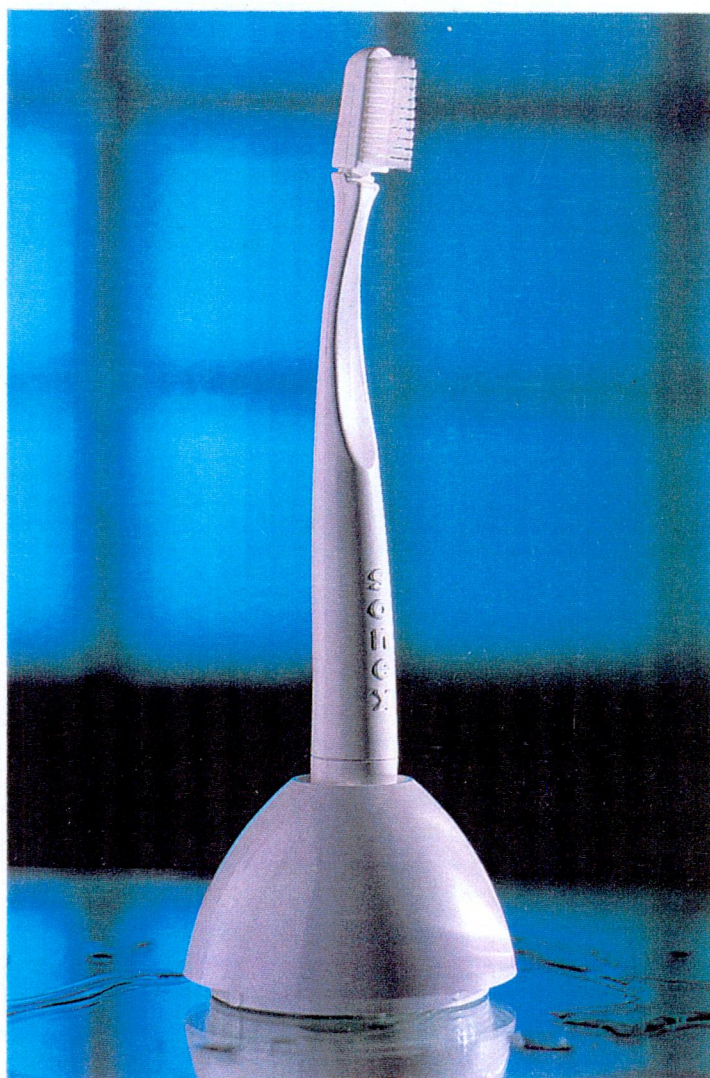


Fig. 15 Sonex Ultra Sonic Toothbrush.



Even the normal electric brushes such as the Braun/Oral-B Plaque remover, which in clinical trials has been proven to remove significantly more plaque than the leading manual brushes, and reduce dramatically the risk of damage to gums caused by over brushing, have never achieved true market success, particularly in Europe. This is due, possibly, to the fact that electric brushes make the task more passive for the user and as a result decreases the users appreciation of, and participation in the dental hygiene process. However it has also been proven that the size of electric brushes in comparison to the more slender manual brush is considered a source of intimidation when placing it inside the mouth. Either way, while this particular direction in dental hygiene products continues to develop regardless of its market success, it would appear that the manual brush is still the most popular with the majority of users, and is likely to remain so for the foreseeable future.

This particular eventuality is one which suits the major toothbrush companies very much, as the manual brush is one which is very cheap and simple to produce in comparison with its electric counterpart. Because of the low tooling costs involved, and the fact that the process for the insertion of the bristles into the head is the same for almost all brushes, the manual toothbrush is ideally suited to the concept of batch production. Batch production allows for the economical manufacture of small quantities of products and as a result enables companies the freedom to develop, a wider product range, and new products for the range on a more frequent basis. Through this process companies can offer the consumer greater choice, even if they can't offer innovation. However, while the process is a means for diversification, it also poses several drawbacks which are relevant to

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Fig. 16 Braun/Oral-B Plaque Remover.

the state of toothbrush design today, such as the fact that it makes product differentiation very difficult and can hamper the designer in his use of legitimate innovation, as they can become over dependant on a process where minor styling changes are the order of the day.

It also raises consumer expectations of new products and so reduces the shelf life of products considerably, forcing companies to constantly increase, both product choice and the sizes of product ranges offered.

This places even more pressure on their designers to confront and solve the problems which the manual brush possesses, and the approach to this, with which the designers appear to be sticking firmly is one of technological innovation. The effectiveness of this approach if judged by its performance to date, can only leave one questioning its success and validity in the future. Perhaps what is required is less development of the toothbrush as a technological instrument, and more development of its characteristics as a product.

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Chapter Three. The Identity of the Toothbrush and the Role of the Designer in Their Creation.

Good design begins with the premise that living is more than just a matter of existing and that everyday things that are both effective and attractive can raise considerably the quality of life.-Terence Conran

(Gorb, 1988, p. 211).

This statement, while somewhat idealistic, is a poignant marker from which to measure the success of the development of any product, and none more so than the toothbrush. It calls into question the moral and ethical integrity and intentions of both the product and its designers, and in the case of the toothbrush could also offer a new direction for the product to develop in.

The ability of the toothbrush to improve the quality of life for its user, while, when in its infancy may have been dramatic, has now faded to such an extent that its presence is now more reminiscent of that ghostly existence of which Terence Conran speaks. There are for the most part three reasons with which this can be attributed, the first being, that the process of dental hygiene has become such an integral part of our day to day routine that we fail to recognise the impact which such a simple task can have on our lives, and this in turn has brought about a demise in our ability to complete the task efficiently. The second reason, which has a direct link with the first, is, that in today's contemporary society we are bombarded with so many technological developments, information bytes, and new products, that the small products which are an important part of our daily lives, are unable to create any significant impression when viewed against this technicolour background.



The third and final reason is that, as the technology of modern products becomes more anonymous and indecipherable to the average person, it also becomes less feasible that the form of those products should express their function. In many cases people have little or no idea how ordinary household products work. As a result the design of many objects has taken on a new guise, one which depends highly on the creation of product images, to which people can easily relate, therefore replacing the need to understand technology. The creation of such images has had a profound effect on products and consumers, and from it has grown the whole concept of product relationship, and personalization.

The toothbrush on the other hand poses a distinct contrast to this, as its function and technology are at the centre of the products image, and are completely self explanatory. It therefore becomes more difficult to instil into the toothbrush, playful meaning, images, and experiences, toward which people can aspire. Consequently the toothbrush is a more simplistic and truthful product, but one which is also perceived as quite uninteresting and banal. If the toothbrush is ever to be considered as anything other, it must deliver some message to the consumer, which draws attention to it as something more than an instrument for cleaning teeth.

The creation of image and experience is a phenomenon which today imbues the majority of products in our world to such a degree that our every desire, thought and dream has been materialised, into some form of object which can be consumed. The question however, is, why has the portrayal of images and experiences in objects gained such importance in our society, and why have we allowed them to completely envelope our imaginations. The answer to these

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questions lies in the fact that when we add image and experience to an object we give it life and engender a memory in its form, thus increasing its mystery and intrigue for the user, as well as enticing them to become more familiar with the object, and share an element of themselves with it.

Another contributing factor is the manner in which we are reassured by the security which products can offer, not merely with respect to material wealth, but also in terms of the knowledge that, in the increasingly fickle society in which we live, the product can be a source of stability, as well as a medium through which we can express ourselves and interact with others.

Another reason for our fascination with objects is the fact that they can't speak, yet seem to have within them some secret which cannot be revealed or penetrated by the spoken word.

We sometimes speak of a language of plants, of insects, and of birds, but what of the language of objects we use every day? In the name of scientific objectivity, we distrust our anthropometric tendencies, our way of projecting our intentions and meanings onto things that do not speak. In doing this we apprehend objects as necessary extensions of our own selves and as the proximate mirror of our acts and thoughts. Their language seems to constitute symbols of our intentions and the determining of our actions (De Noblet, 1993, p. 356).

But why should we reject this ability to interface with objects on more than a functional level? As long as the semiology of objects is developed at a subconscious level it is perfectly acceptable, as it is in man's nature to create life, and consequently anything he designs will give off signs and images. As people become more and more aware of themselves and their surroundings, these images and experiences will become increasingly important and objects which

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are not in tune with their own semiology will become obsolete. It is therefore the responsibility of the designer to ensure that the semiology an object is channelled in the correct direction, so it is able to communicate clearly.

For the average person the toothbrush is a desperation purchase made because, their old brush is no longer fit for anything except cleaning out the soles of shoes. When they make this purchase they generally have no pre conceived idea of what they want from a brush, apart maybe, from the size of the head or the bristle strength, and it is for this reason that when they approach the shelf, the first impression which the brush gives is crucial to its success. Reading the back of the back of the packet to see the technological and performance claims the brush makes is a task usually only completed to confirm that the right choice has been made, and while these claims, in some cases, may indeed be quite innovative, they are wasted if they are not presented to the consumer in the correct manner. Peter Lawrence describes design as ...'Values made visible', and the designer as 'an interface, the link between the thing and the user, between the company and the consumer' (Gorb, 1988, p. 205).

If this is indeed the case, it brings into serious question the role of the industrial designer and the utilisation of his skills, in many of the markets leading toothbrush companies. Many of the products on the market today fail to illustrate the features of their designs effectively and in a manner which will command the attention and interest of the consumer.

The Aqua fresh Flex and Direct is a brush which can hardly be accused of this, as its intelligent use of design has made this relative new comer an instant market success.

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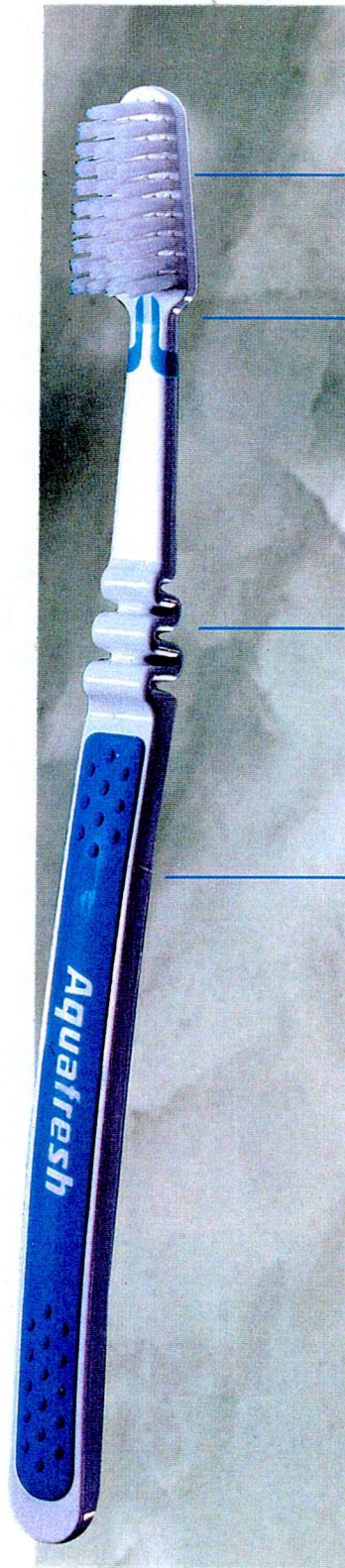


Fig. 17 AquaFresh Flex.

The design of the brush makes good use of product semantics ,a design tool which has proved itself a lucrative technique for increasing sales, “as it can add symbolism, fantasy, tradition, and even humour, to the characteristics of today’s products”(Heskett, 1989, P. 87).

In the Flex and Direct it has been used to highlight the products design features namely, the brushes flexible neck which is represented by a characteristic ‘wiggle’. The brush also makes excellent use of materials, textures, and colours, to accentuate the brushes rubber inlays, which are an integral part of the brushes grip and directable head. These features instantly set the brush apart from others on the shelf and as a result one seems to be drawn towards the product with a certain degree of intrigue. The most interesting facets of the brush however, is that during clinical trials undertaken with 147 patients at the Forsyth Dental Clinic Boston, the users were so impressed with the efficient and professional image of the brush that they found themselves brushing for considerably longer and with more care than they did normally. It seems likely that the design of the brush and its interesting aesthetic are principally responsible for this, however there is a possibility that the participants brushed for longer because they were conscious of their involvement in the study. The result, regardless of the reason behind it, is conclusive in finding that if it is possible to change peoples perception of the toothbrush, so that they feel some direct relationship or improved interface with the product, it may encourage users to improve the frequency and technique of their brushing. The toothbrush must, if it is to be successful in this endeavour, become an object which is capable of interpreting and responding to the moods and aspirations of the user, or better still be capable

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of envisaging those moods before the user has realised what they are. It is often the case that consumers are not sure what they want or expect from a product, a fact which would appear to be particularly prevalent in relation to the toothbrush. Therefore if a company relies too heavily on market research, they may never offer the consumer a product to which they can relate. Instead companies must use the examination of current and future social trends, across a wide spectrum which encompasses, age, sex, and cultural background, as a base for their inspiration. The successful interpretation and translation of this inspiration into products may be the key element needed to transform the toothbrush from a product of banality into one which is representative of an experience, at the centre of which is the user. Such manifestations are however, not easily achieved, especially in relation to the toothbrush.

Many of today's products are based around the technology of the microchip, and as a result there is a lot of pressure placed on the designer to capture the essence of this complex element in the aesthetic of the product. While some have tried to achieve this others have steered their energies in the opposite direction, toward the aesthetic freedom which the microchip can offer. They have used this freedom to manipulate the shape and size of products, as well as to etch meaning and symbolism into them. However, this freedom is not available to the toothbrush and so the degree of aesthetic and symbolic transformation which can be undertaken is determined by the functional and technological constraints which the product's concept has placed on it. This does not mean that it is impossible for the toothbrush to contain images that people can aspire to, it merely calls for a more subtle use of aesthetic semiology. In some cases such restrictions may make the product more interesting

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Fig. 18 Philippe Starck Floucaril Brush.



and give the design an approach more likened to that of architecture of furniture design, in that the essence of the product is captured in its basic functional characteristics, and as a result seems somewhat purist.

One brush which, with relative success, has completed, with the aid of clever aesthetics, the move from the 'low' plane of dental hygiene, to a somewhat 'higher' plane of cultural icon is the Floucaril toothbrush designed by Philippe Starck. Goupil (subsidiary of the L'oreal Paris group) realised that the tooth brush as a product simply does not display itself, and instead, spends the majority of its life sadly laid on small glass shelves, or protruding from old cups. Their ambition was to cure the toothbrush from the chronic stage fright from which it seems to suffer and to transform it into something quite noble. While this is indeed a fine sentiment, perhaps their one mistake was in approaching Philippe Starck to undertake the project. While they would be harnessing the talents of one of Europe's most accomplished and critically acclaimed designers, they would also receive all the excess baggage and cultural absurdity which would accompany this title. The end result was destined for guaranteed success, but rather than becoming an everyday icon to be adorned on the supermarket shelf, it would instead become a 'design icon', a means of brining the common man his first lesson in true design, associated with over priced "design aware" retail outlets.

The brush itself, carrying all the Starck hallmarks, rather than accentuating the true features of the brush, instead hides them away by inserting the head of the brush into a conical holder, which suspiciously resembles an ink

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Fig. 19 Philippe Starck Excalibur Toilet Brush.



well, while the handle, with its characteristic Starck whisp protrudes in an upright position, to give a touch of elegance and excess to the products identity. The product is some what excessive in its use of materials, with a total of four different plastics and two components being used in the creation of the facade, and the end result seems to be a of a quick fix solution in some respects, as instead of creating a brush with a unique identity to give pleasure to its users when looking at, and using it, he has offered a piece of sculpture, containing strong images of a feather pen and ink well, which conveniently functions, albeit not convincingly, as a toothbrush. However, what is admirable about the brush is Starck's ability to illustrate just how dramatic a metamorphosis the common toothbrush can undertake, an achievement which he made even more convincingly in Excalibur, a product which transformed the toilet brush from something considered quite unseemly, into one full of irony and good humour, brining a smile to its user, even while undertaking this most daunting task. Credit must also be bestowed on Goupil for having the vision to develop such a concept, one which has influenced many of their contemporaries, such as Jordan and Reach.

Oral-B have recently developed the Squish Grip, a brush for children, designed to make brushing a more enjoyable experience for them to partake in, and to encourage a more considered approach to their brushing technique. This brush has been very successful in this endeavour and its eye catching appearance has seen it become popular as a fashion object with a percentage of the teen market.

The previous example of the Squish Grip, where a distinct market cross over has occurred, clearly illustrates that the rigid structure applied in the

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Fig. 20 Oral-B Squish Grip.



division of consumer types, based on age and tooth development, may be ignoring the real needs of the consumers. The continued development of globalisation is seeing product differentiation becoming increasingly difficult, with the result that consumers are being offered less and less choice of products, based on their needs as individuals. The future is likely to see a distinct reaction to this phenomenon, with consumers seeking products to which they can relate. It is this reaction which could create potential opportunity for the development of small products such as the toothbrush, which by their nature are personalised. The ability to play off this, by developing products, based on a modular system, to which different aesthetics, styling, colours, and materials, could be applied, offering the consumer a wider product choice to cater for their specific tastes, is a concept which has enjoyed great success with the Swatch in the 1980s, was exploited as far back as the early 19th century with the queens ware of Josiah Wedgwood, and is one which could enjoy a prosperous renaissance period in the near future.

The environment which surrounds the toothbrush can provide a wealth of inspiration for the development of a range of brushes that are designed to fit into specific interiors by manipulating different materials, textures, and colours. However, what is important, is not the number of aesthetic directions which are open to the toothbrush, but the ability of companies to use aesthetics as a tool to help sustain product differentiation and market competitiveness, and most importantly to attach an element of pleasure to the product, be it conscious or subconscious, that will encourage the user to become a part of, and enjoy the experience of dental hygiene.

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Fig. 21 Various Swatch Watches.

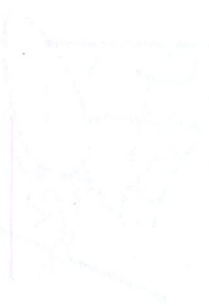
However, there must also an element of care taken as there is a danger that while making a product such as the toothbrush more pleasurable and personal, in an attempt to achieve a better brushing technique, a product may become too desirable and as a result make people less inclined to throw it away. This is a simple example of the careful balances which must be achieved in the design of a toothbrush, others include the balance between design and technology, and the old debate between form and function, where the achievement of a balance is at its most challenging.

The toothbrush, which is a product that is considered functional by nature, and yet is badly in need of sort of personality to which people can relate, is a good example of how in many of today's products form and function have still not succeeded in joining in a state of equilibrium, and the two brushes which illustrate this better than any other are Philippe Starck's and the Hook 2.

The Hook 2 which was designed by Jack Hakanson has reduction at the forefront of its design agenda, and has an aesthetic which would surprise even the most hardened utilitarian. The simple design which allows the brush to stand upright on a flared base, features a replaceable head to cut down on waste, an idea that was inspired by the one billion toothbrushes discarded, in the US alone, each year. The styling on the other hand is not quite as clever, and the brushes personality is provided by a series plastic rings that fit on the neck of the brush which can be interchanged for variety.

A complete contrast to this is Philippe Starck's brush with its poetic and metaphorical aesthetics, as well as obvious functional flaws, such as

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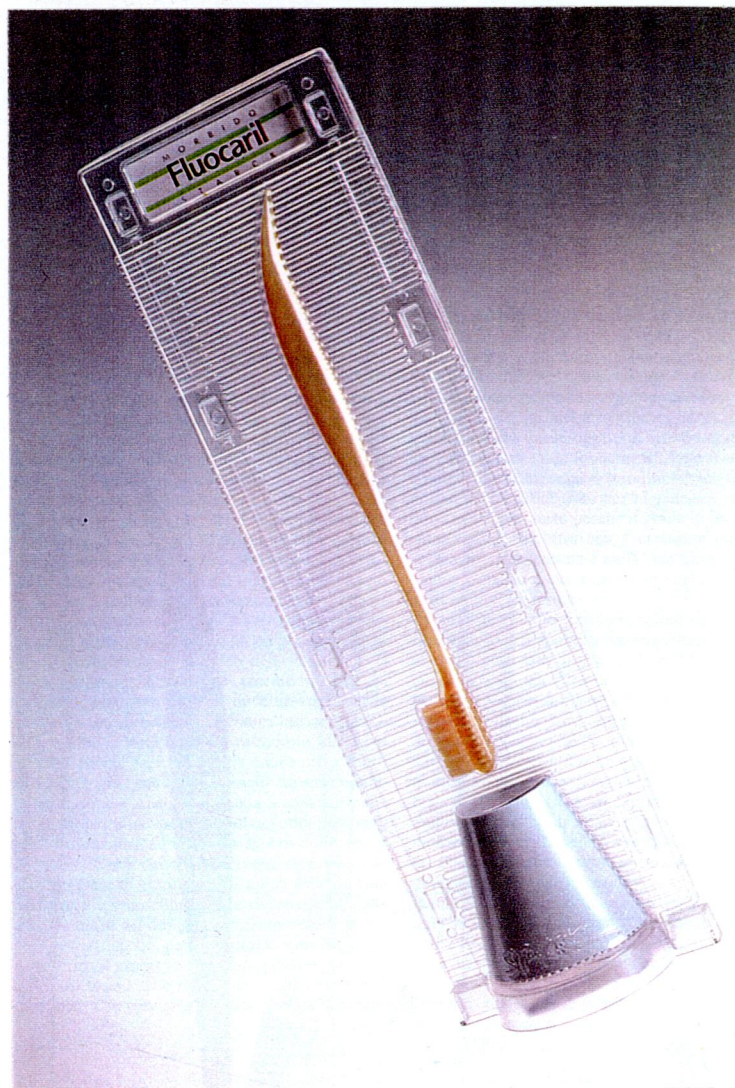


Fig. 22 Philippe Starck Fluocaril Brush.

the inevitable collection of food debris and bacteria in the base of the product, has its intentions set on the seduction of the user.

Although there will always be those who favour the romantic in lieu of the utilitarian, the real question is will there always be a separation between the two, or will the needs of our culture and consumers bring them together in the future.

If this to happen then it will be the designer who will be at the centre of the change, as it is the designer above all others who possesses the greatest variety and diversity of skills, including engineering, marketing and design, and most importantly it is he who has the skill to effectively communicate between, and intertwine the various disciplines, for the purpose of product development.

However regardless of the importance of role of the designer in a company, he is not the sole creative force, rather, he is a link between a group of forces which when joined form an immensely powerful source of creativity.

Likewise the ideal toothbrush will not be developed from the manipulation of a single innovative force, be it, technology, design or marketing. It will instead require these forces to unite, and it is this unification that would appear to be lacking in many of the markets leading companies.

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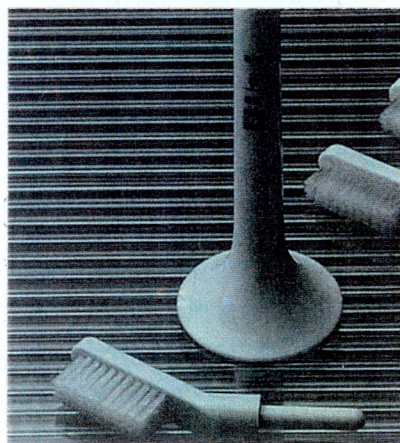
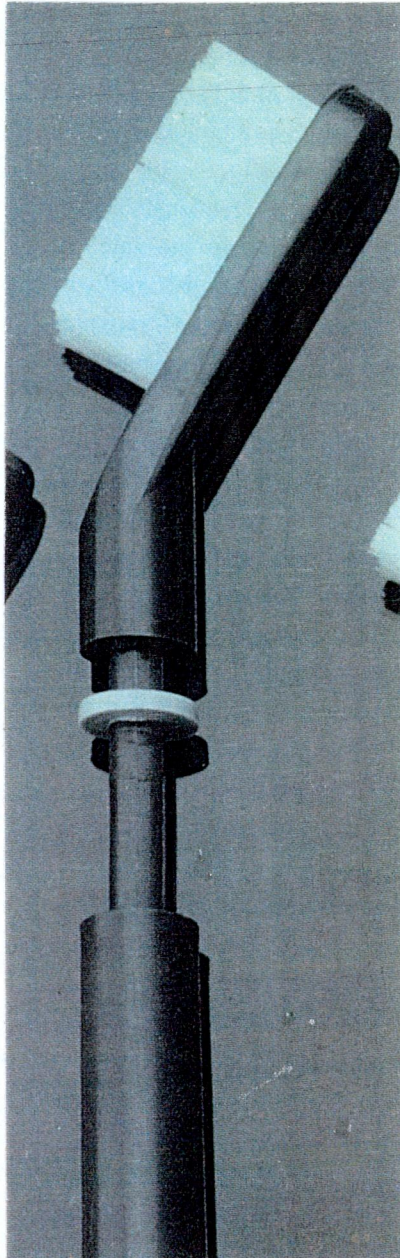


Fig. 23 Hook 2.

Chapter Four. The Role of Marketing in the 'Creation' of a Product.

While the last three chapter have illustrated that while both technology and design are both very important and influential concepts in relation to the development of the toothbrush, they are not capable of, sustaining a continual development process, or allowing the toothbrush to develop as a more complete product, but what it has not illustrated is how a more balanced approach to the use of these disciplines may be of benefit. The final chapter of this thesis will attempt to make an examination of the influence that a more balanced and effective use of the marketing mix may have on the development of the tooth brush.

A more balanced use of the various disciplines is not all that is achieved from an effective marketing mix, there is also a great amount of inspiration, interdependence, and communication developed between the various disciplines. The role of the designer changes from that of surface stylist, to one of conceptualisation in the fields of design, technology and marketing.

The differentiation and development of products, using technology and design alone, can be a very expensive, time consuming and often misguided process. The inclusion of a good marketing strategy in this process can help to make it considerably shorter and more cost effective by ensuring that the development is taking the right course and is aimed at the correct market.

The developments of design and technology can often be very influential too, with the creation of new product concepts, for which markets can be developed resulting in changes in our life styles and cultural habits. However, the most important achievement in direct relation to the development of the

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toothbrush, which results from intelligent use of the marketing mix is the production of a complete product concept. A concept of a product which is fully formed in every aspect, including function, aesthetic, identity, presentation, and cost, and it is this concept which creates a more accurate picture of the ideal brush than any other which has been presented previously. The concept is not considered ideal because of the success of any one feature, but instead gets its title because of the strength which the joining of these characteristics generates. One of the best examples of the transformation of a product through, the development of a distinct product concept and clever use to the marketing mix is the Gillette Sensor razor. When consumers were asked what occurred to them when they thought of Gillette, one young man replied "I think hollow, plastic, and blue" which was a good description of the company's successful disposable razor (Bradley, 1995, p. 28). The survey showed that the company had a very poor image in the market, particularly with the younger consumer. Gillette wanted to create a new image for the company and its products, one which was closely associated with changes which were taking place in relation to people's lifestyles, and perceptions of personal hygiene. The product which they developed, to be the flagship for this change was the Gillette Sensor, and it was to become a textbook example of good product strategy. The razor itself represented a significant advance in the development of shaving practices through its technological innovations, namely, the blades, which were the thinnest that had ever been produced, and were mounted on springs to allow them to follow the contours of the face, thus producing a closer and cleaner shave. During the concept stage of the project it was thought that to capture the entire market, the Sensor blade technology should be offered in both disposable and system

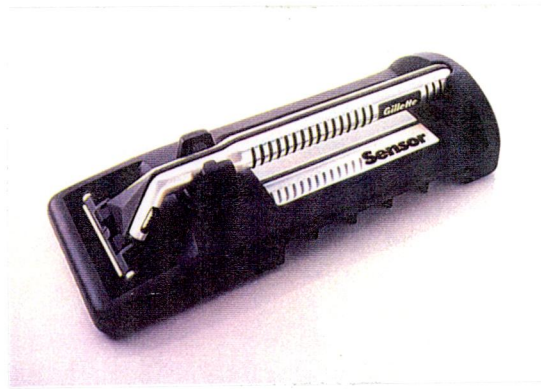


Fig. 24 Gillette Sensor Razor.



(handle and separate interchangeable cartridges) razors, however it was decided later not to run with this as if the Gillette brand name were to be synonymous with quality, lasting performance, and innovation, it would be better to de-emphasise their disposable range somewhat, to allow the more up market "system razor" be the focus of the Sensor concept. "The Sensor was the symbol of the new Gillette" and the significance and meaning of this symbol were etched in the innovative aesthetic of the product, which combined the quality and tactility of metal and rubber in a simple but effective geometry, to produce a look of functional efficiency, and elegance (Bradley, 1995, p. 28).

The image of products will have to become increasingly strong in the future as changes in society and our ever developing communications structure make it increasingly difficult for product messages to reach us, and when they do it is usually by the indirect means of media advertising. This means that when a consumer enters a shop they have already made of their product choice, and while they may look at a variety of brands, are seldom swayed from their pre-conceived idea. This is particularly true in markets for products such as consumer electronics, where both corporate and product identities must be strong if a company is to remain competitive. Taking this into consideration, along with the fact that the retail landscape is fast becoming a sea of advertising which is impossible to interpret, there appears to little hope for the recognition of products that are represented by a poor identity such as the toothbrush. Some course of action must be taken to redeem these products from the banal fate for which they are destined, and while the part to be played by design and technology has already been examined, the role of marketing has yet to be discussed.

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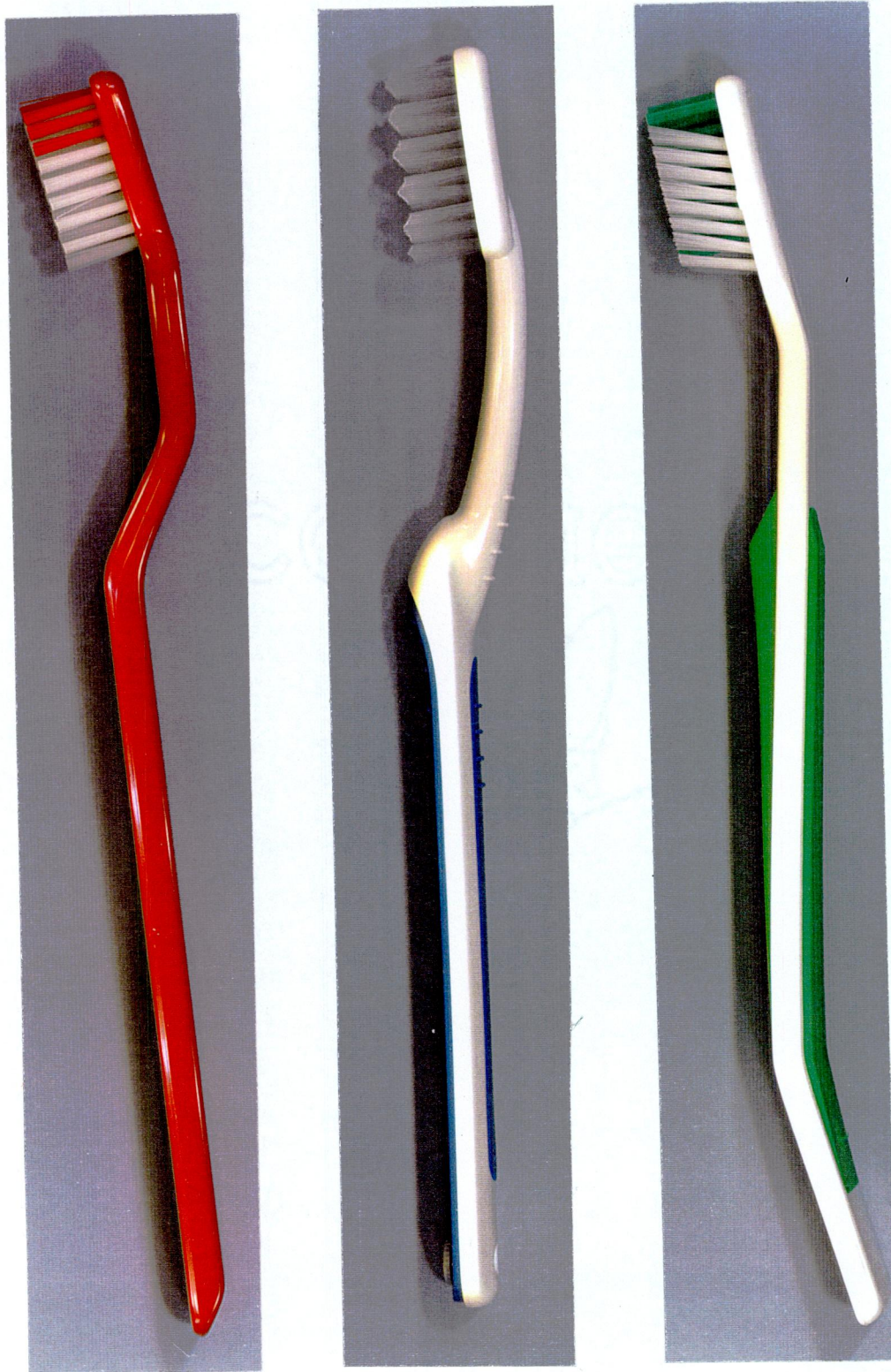
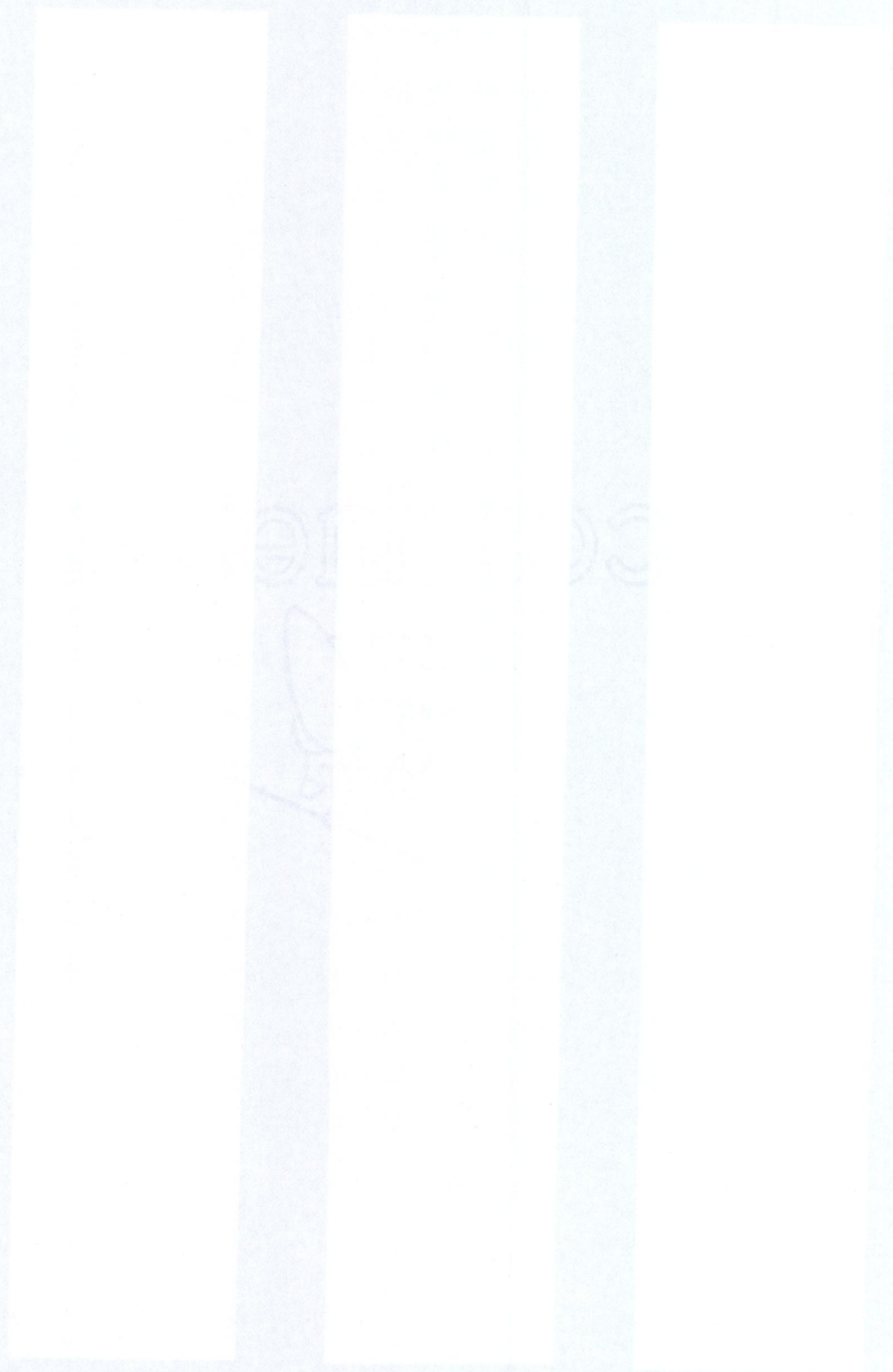


Fig. 25 Mentadent P Professional Range.



Marketing has the potential be a very powerful tool in the development of the toothbrush. It can provide market analysis for the present and make predictions as to future directions of products, and consumer trends, which can be beneficial in guiding design and technology to develop in specific direction. However, its greatest influence is in the creation of identities both corporate and product which can help in achieving market success and brand loyalty.

In comparison to companies like Gillette, where corporate identity is a major ingredient in there success, the majority of toothbrush manufacturers, while being a household name, have a very poor corporate image, and one only has to look the market leaders to find proof of this. For example, it would, for the most part, be very difficult to identify a toothbrush with their respective company if the brand name were not printed on the brush. Not only this, it is even difficult to associate the various brushes in a range with each other, as in the Professional range by Mentadent P, which has three brushes, the Diagonal, Ultra, and Professional, that share no common characteristics. These products have no real impact when viewed in isolation, and so they must find some feature, be it function, aesthetic, colour, or use of material that allows the them to be easily viewed as a family of products, to help them strengthen their image on the shelf and in the mind of the consumer. There is also very little consistency in the manner in which the products are presented to the consumer in terms of product support, such as packaging product literature, and advertising. If the toothbrush is undergo a change that will make it a more successful product, it will have to offer its customers more than superiorly designed products, it must offer them a brand name and identity which they can buy into, one which will make an



Fig. 26 Aquafresh Product Packaging.



important statement about the consumers social and cultural standing. Every aspect of the company is a representation of the product they produce and is, as a result, a determining factor in the success of that product. Toothbrush manufacturers and their marketing experts must use the image of their company to send a message of competence, reliability, and trust to their consumers, in an attempt to win their confidence and attain their loyalty to the product.

Consumers expressing loyalty to particular brand of toothbrush is a relatively rare concept, but is an issue which must be addressed and developed by marketing teams in all companies as in today's increasingly competitive market companies need to be able to focus on increasing consumer numbers rather than trying to maintain the consumers they already have. However this is probably the most difficult of all challenges facing the toothbrush manufacturer and it is on which will take a great deal of investment, of both time and resources, and commitment to the perfection of the product and company identity, to conquer.

Oral-B is one of the few companies who has successfully developed a strong corporate identity, and having become the worlds leading manufacturer of toothbrushes has reaped the rewards for their efforts, accordingly, and have proven the power of a positive marketing strategy. The company (owned by Gillette) first began to really develop their corporate identity in the late 1980s , when they solicited the help of Braun's top designer, Dieter Rams, to work on the designs for a new range of brushes. Rams applied a very clean and functionalist aesthetic to the range, making use of tinted transparent plastics, to allow the bristles to form the focus of the brush. While the brushes were very innovative for their time, much of their success can be attributed to clever marketing on the part of the company.

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Fig. 27 Mentadent P Product Packaging.



The products were launched with a major advertising campaign, which not only pushed the new range of brushes, but also the whole concept of Oral-B, the company behind the products. The advertisement campaigns were high profile and featured a slogan that proclaimed Oral-B to be “the brand preferred by, and recommended by dentists”. These claims were not just idle advertisement gibberish however, as prior to the launch of the brushes, Oral-B introduced a campaign directed specifically at dentists, in an effort to win their favour and consequently have them endorse Oral-B products. The campaign worked and many dentists recommended, and still do, Oral-B products to their patients. Today while many companies, influenced by Oral-B’s strategy, send product samples to dental surgeries, Oral-B are the only company to have a team of public relations officers, who are employed to travel, full time, to the various dentists to promote their products, which continue to be highly recommended. The strategy employed by Oral-B has enabled them to remain at the top of the market, as even today where, product differentiation would appear to be becoming increasingly difficult, and competition is intensifying daily, they represent, not a range of products, but a complete dental hygiene concept which people know and trust.

What the Oral-B example illustrates, more importantly than anything else is that the toothbrush may be considered a mundane instrument for dental hygiene, but it has the potential to be something much more than that, if it is only developed, utilising all the disciplines of the product development process, into a fully formed product.

condemner



mentadent

■ GUM DISEASE IN THE MAJORITY OF CASES IS PREVENTABLE AND IN THE EARLY STAGE, THE SECRET OF SUCCESS IS EFFICIENT PLAQUE REMOVAL.

MENTADENT P TOOTHPASTE

■ GIBBS DENTAL SCIENTISTS, AFTER 10 YEARS OF RESEARCH, HAVE DEVELOPED A BREAKTHROUGH TOOTHPASTE FORMULA — PROVEN YOUR GUMS HEALTHY.

■ THE MENTADENT P FORMULA NOW CONTAINS:
— TWO ANTI-BACTERIAL AGENTS (TRICLOSAN AND ZINC CITRATE) WHICH WORK TOGETHER TO HELP PREVENT THE RE-GROWTH OF BACTERIA BETWEEN BRUSHING.
— FLUORIDE TO STRENGTHEN TEETH AGAINST DECAY.

■ THE FORMULA IS PATENTED. ITS UNIQUE COMBINATION OF INGREDIENTS IS CLINICALLY PROVEN TO BE 70% BETTER FOR GUMS THAN ORDINARY TOOTHPASTE.

MENTADENT P PROFESSIONAL TOOTHBRUSH

■ EVEN THE BEST TOOTHPASTE NEEDS A GOOD BRUSH TO REMOVE THE PLAQUE THAT CAN CAUSE GUM DISEASE. THE MENTADENT P PROFESSIONAL TOOTHBRUSH, WITH ITS UNIQUE 3 BEND HANDLE, REALLY MAKES IT EASY FOR YOU TO BRUSH AWAY PLAQUE FROM THOSE TRICKY BACK TEETH.

5 STEP ORAL HYGIENE ROUTINE

GET PLAQUE BEFORE PLAQUE GETS YOUR GUMS.

1. BRUSHING:

■ YOUR TOOTHBRUSH SHOULD BE USED AT A 45° ANGLE TO YOUR TEETH, POINTING TOWARDS YOUR GUMS. BRUSH IN SMALL CIRCULAR MOTIONS CONCENTRATING ON TWO TEETH AT A TIME GETTING EACH TOOTH REALLY CLEAN. REALLY EFFECTIVE BRUSHING TAKES ABOUT 2 MINS.

2. FLOSSING:

■ USING DENTAL FLOSS REMOVES PLAQUE BETWEEN YOUR TEETH WHERE BRISTLES CANNOT GO.

3. DISCLOSING TABLETS:

■ IF AVAILABLE, USE DISCLOSING TABLETS TO HELP YOU SEE IF ANY PLAQUE REMAINS AFTER BRUSHING. THESE TABLETS ARE

MADE OF A HARMLESS DYE WHICH HIGHLIGHTS WHERE PLAQUE HAS NOT BEEN FULLY REMOVED.

4. DENTIST:

■ AT LEAST TWICE A YEAR GET YOUR DENTIST TO CHECK THAT YOUR TEETH AND GUMS ARE HEALTHY.

5. DIET:

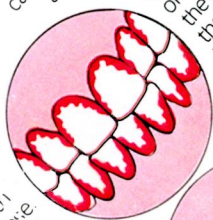
■ PLAQUE IN THE MOUTH CONVERTS THE SUGARS CONTAINED IN FOODS INTO ACID WHICH ATTACKS YOUR TEETH. THEREFORE, TRY TO CUT DOWN THE OCCASIONS ON WHICH YOU EAT BETWEEN MEALS. BRUSH YOUR TEETH AFTER MEAL TIMES TO REMOVE PLAQUE AND ENJOY FRESH BREATH CONFIDENCE.

3 Gum Disorders

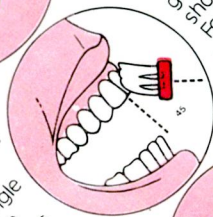
PREVENTION

The prevention of gum disease is very much in your own hands. If you remove all the dental plaque from your teeth and gums, you should never suffer from any gum problems. If you follow this 'Prevention Plan', you can be confident that you are looking after your gums and teeth properly.

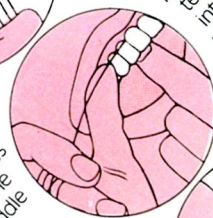
A Chew a disclosing tablet and spread the liquid around the teeth. Using the tongue. Rinse. Using an angled dental mirror, look for the red areas in which the red



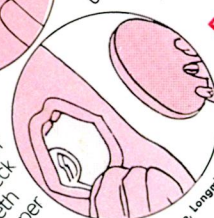
B Brush the teeth using a good toothpaste. Keep the brush at a 45° angle to the teeth and gum margins. Brush all sides of each tooth, concentrating on a few teeth at a time. Flex the



C Cut off about 18 inches of dental floss. Wind the floss around the middle fingers of each hand, leaving about 4 inches between the two hands.



D Use an angled dental mirror and a larger hand or bathroom mirror to check round behind the teeth and all around the upper and lower teeth that no plaque remains. If there are areas of red disclosed plaque, continue cleaning



E Remember to visit the dentist regularly to check that both your gums and teeth are healthy.

mentadent Preventive Dental Care



Fig. 28 Various Companies Product Literature.

WE'VE TRIPILED THE CLEANING SURFACES OF OUR BRISTLES.
DOES THAT MEAN
YOUR TEETH AND GUMS WILL BE THREE TIMES HEALTHIER?

No, it's not as simple as that.

But what we can tell you is this: each bristle of the new Advantage® toothbrush works a lot harder to fight plaque.

You see, ordinary bristles are smooth, but the Advantage bristles are micro-textured.

They're designed to clean plaque with the whole bristle, not just the tip.

We call it "whole



Ordinary bristles are smooth.



New Advantage bristles are micro-textured.

bristle cleaning," and it effectively triples the cleaning surfaces of each bristle.

The Advantage is undoubtedly a breakthrough.

Try it for a couple of months. We think your teeth and gums will agree.

Oral-B

The brand more dentists use themselves.



©1996 Oral-B Laboratories, Belmont, CA 94002.
Dentists recommend flossing daily. <http://www.oralb.com>

Fig. 29 Oral-B Advertisement.



Conclusion.

The toothbrush is a product being used by an increasing number of people, more frequently than ever before, but despite this it is a product held with very little regard in our society, with respect to both its function and identity. Examining the reasons for this has been one of the main objectives of this thesis, and the conclusions which have been drawn as a result are as follows:

In many respects the role of toothbrush in the dental hygiene process is a passive one, while it does in fact carry out the cleaning of teeth, the action required to initiate the cleaning process is prompted by the user. Consequently effective cleaning is as much a function of the users skill, as it is the design of the brush. However, the majority of toothbrush development has focused, not on this balance, but on trying to design products which eliminate the necessity for user effort and skill. Given that, it is most improbable that the manual toothbrush will ever achieve complete functional independence, and that to date it has still not managed to satisfy the users functional requirements, this seems somewhat of a futile initiative.

A more innovative approach, one which has already been taken by a number of smaller companies, may be based on attempting to enhance the role of the user in the dental hygiene process, by making the experience more enjoyable and interactive. The manner in which we perceive products can have a dramatic influence on the way we use, and relate to them. If the consumers perception of the toothbrush, which is currently very poor, could be changed, through innovative use of design, technology, and marketing, then maybe the toothbrush would be half way toward solving its user related problems.

conductor



has been so much development in certain areas such as computers, and communications. However, the pace of product development of a simple product, such as the toothbrush is far slower, as the concept of dental hygiene is one which will not change in the future, and so, unlike the concept of the computer, there is an end very much in sight. It may therefore be fine business acumen, rather than lack of vision of the major companies, which has stunted the growth of the 'ideal' toothbrush. One manner in which to question the logic of this theory is to examine the consequences of a scenario where the development of the toothbrush undergoes a dramatic acceleration. Such an acceleration could be initiated by the launch of a product which is completely new in its approach to, and solutions for the problems facing the manual toothbrush. If such a toothbrush were to penetrate the market at the correct point and with significant impact, the most likely result would be a gradual growth toward market domination, followed by a period of steady sales.

However, it would be only a matter of time before the market competitors would respond with similar, or even more innovative products, in a bid to retain their share of the market. Consumer expectations would also grow, and the combination of these two factors could force the development of yet another a new product. This development would be in the hands of the market leader, and if accelerated product development were to be sustained, would require a huge investment in research, design and marketing, at costs which could prove a serious drain on profits made by the final product. In fact more profit may stand to be made by companies who are competent product imitators and redesigners, as opposed to innovators.

conqueror



During the course of this thesis it has become obvious, contrary to what is illustrated by most of the products currently on the market, that indeed there is great scope for the future development of the toothbrush, regardless of whether the approach adopted by companies focuses on technological innovation, such as in the Aqua Tooth Polisher, the improvement of user interface and product perception, as illustrated in the Aqua Fresh Flex, or on the creation of design icons, like the Philippe Starck Fluocaril brush. For example the exploration and manipulation of some of the new materials and manufacturing processes, which are finding use in other areas of design, may possess potential for development, in relation to the toothbrush. The issue of disposability which is of growing concern to our society, has yet to be addressed by many of the leading toothbrush companies, and the development of products which effectively tackle this problem may prove, very beneficial in preserving our environment, as well as, a very profitable enterprise. These are just a small representation of the areas which possess development potential with respect to the toothbrush, but are enough to show that all the ingredients required for the creation of a diverse range of innovative, and pleasurable products are present, and merely require the correct treatment by a company with the ambition to take on the task.

Unfortunately however, only a few have risen to this challenge, and consequently it can only be assumed that what is hindering this developmental progression is, a lack of vision on the part of the leading companies.

There is a possibility however, that this is not the case. Today our society expects so much of technology, design, and industry as a whole, as there

conclusion



There is no room for complacency in companies who establish themselves as market leaders as there will always be a new company watching and waiting for the opportunity to develop a product which is superior in concept and design to those already on top of the market, a fact which has been illustrated with regard to the toothbrush, by the rapid development and success of the Aqua Fresh Flex and Direct, produced by market new comers SmithKline Beecham. While all these factors could prove potentially hazardous to the success of a company, the most prominent danger is of a company designing themselves out of the market. Toothbrush companies may well put themselves in danger of developing the product to a point where the whole concept of the manual brush could become obsolete, resulting in the development of a new product direction, such as a mouth wash which devolves all the debris and plaque on the teeth and gums. If this were to happen it would surely result in the collapse of many of the markets leading companies who, due to over dependence on a product would be unable to make the transition required to remain competitive.

When such a scenario is illustrated, the reason for the tardy development of the toothbrush becomes apparent, and as a result the companies are some what more justified in there actions. However, the cautious approach, which has in the past been adopted by so many companies is no longer a sufficient means of retaining market credibility. Companies must look to the future for inspiration and direction, investing time and effort into creative workshops and conceptual projects, which can help companies and their staff to achieve the flexibility which is required if the future is to be embraced wholeheartedly. As has been illustrated during the course of this thesis, there is

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ample opportunity for the development of the toothbrush as a product, in terms of its technology, user interface, and identity, what is needed is greater vision within toothbrush companies to enable them to exploit these opportunities effectively.

The designer must play an important part in the creation of this vision, and consequently his role within companies must change. For far too long the designer has created products which are essentially a response to the changing desires of the consumer, in today's society consumers are exposed to so many new products and influences that it becomes difficult for them to create specific ideas of what a product should be. This confusion provides the designer and company with the opportunity to influence the consumer, by creating desires, product identities, potential markets, and even new cultural forms. It is this opportunity which should be grasped by the designer, allowing them to steer both the products and consumers in an attempt to bring them closer together, thus improving the interface between the two.

As this thesis has shown the creation of product identity, symbolism, and desire, are all very potent means, with which to attract the consumers. and as the product becomes more and more an expression of personalities, these characteristics are of increasing importance.

The majority of products have undergone a metamorphosis, moving from the realm of simplistic utilitarianism, to chaotic symbolism. The reason for is that consumers expectations of technology and products are so high that today, functional efficiency is hardly even considered, it is simply expected.

condemner



We are a society capable of using and interfacing with a myriad of products, yet incapable of understanding the workings of even the most basic of these.

The meaning and symbolism of products has today become the envelope for technology and function, and if the perception of products such as the toothbrush is to be altered, they too must exude such imagery.

The designers profession is no way that of artist, and certainly not that of aesthetician, but rather semanticist-Philippe Starck

(De Noblet, 1993, p.360).

When one considers just how much today's consumer wants and expects from even the most simple of products, such as the toothbrush, it becomes impossible to imagine the "ideal design" ever being achieved. Perhaps then the answer lies not with the product, but with a change in the consumers expectations of the product.

It is mans natural tendency to force the things around him to developing and improve, however sometimes, if instead of expecting perfection from the objects we use, we could make the effort to adapt and interface with them better, a greater harmony between man and object could be achieved, resulting in both functional efficiency and user pleasure. If this were the case perhaps the "ideal" solutions to the problems of the toothbrush are to be found in uncomplicated products, such as the Addis's first brushes.

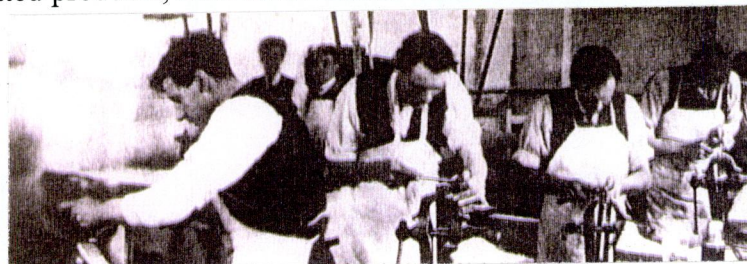


Fig. 30 The Production of Addis's First Brushes.

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Interviews

TOWNSEND, Caroline.	Marketing Manager, Johnson and Johnson Ireland. November 1996, Irish Headquarters Belgard Rd. Dublin. Subject: The Role of Marketing in the Toothbrushes Industry (See Appendix 1.1).
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CLAFFEY, Prof. Noel.

Department of Peridontology, Trinity College

Dublin, October 1996, Dublin Dental Hospital.

Subject: Basic Functional Requirements of, and the
Problems With the Toothbrush

(See Appendix 1.2).

LUMBROSO, Jacques

Dental Surgeon, Nenagh Co. Tipperary.

October 1996, Dental Surgeon, Nenagh Co.

Tipperary.

Subject: The Reasons People Fail to Brush With

Care, and the Dentists Perception of the

Toothbrush (See Appendix 1.3).

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Appendix.

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Interview Questions For Three Research Interviews.

1.1 TOWNSEND, Caroline. Marketing Manager, Johnson and Johnson Ireland.

November 1996, Irish Headquarters Belgard Rd.

Dublin.

Subject: The Role of Marketing in the

Toothbrushes Industry

Q1. Do people express brand loyalty to toothbrushes?

Q2. How often do Reach a new product onto the market?

Q3. Is the toothbrush a global product?

Q4. What type of marketing strategy do Reach employ when launching a new product?

Q5. How important is it for dentists to recommend your product?

Q6. Do you feel that a lot of the toothbrushes developed are not really legitimate innovations in dental hygiene?

Q7. How stiff is the competition within the toothbrush market?

Q8. Why is the manual toothbrush more popular than the electric?

colorator



1.2 CLAFFEY, Prof. Noel. Department of Peridontology, Trinity College
Dublin, October 1996, Dublin Dental Hospital.
Subject: Basic Functional Requirements of, and the
Problems With the Toothbrush.

- Q1. Outline the basic functional criteria of a toothbrush?
- Q2. How important is correct brushing?
- Q3. Are the toothbrushes currently available on the market functionally effective?
- Q4. How do you feel the toothbrush could be improved?
- Q5. What brush would you recommend to your patients?

1.3 LUMBROSO, Jacques Dental Surgeon, Nenagh Co. Tipperary.
October 1996, Dental Surgeon, Nenagh Co.
Tipperary.
Subject: The Reasons People Fail to Brush With
Care, and the Dentists Perception of the
Toothbrush.

- Q1. How do your patients feel about brushing their teeth?
- Q2. What brush would you recommend to your patients?
- Q3. How do you feel the toothbrush could be improved?
- Q4. Do you see the toothbrush being replaced by a new product in the future.

CONQUEST

