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JUDGMENT IN FRAGRANCE CREATION AND SELECTION

The popular concept of a perfumer is that of an artist working from a palette of aroma materials to create, somewhat mystically, a range of fragrances for a multiplicity of products. Perhaps not so evident is the need for good judgment throughout the perfumer's efforts. The role judgment plays in fragrance creation and selection, what kinds of assessments are needed and when the judgment of the single perfumer should be supplemented are discussed.

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Consider the possible origin of a perfume. Often it is in response to a request for a fragrance for a new consumer product or for an improved version of an old. The usual practice is to present to the perfumer a concept of the product as it will appear on the market, with a request for a fragrance to support that concept.

For the perfumer this is when the first judgment is made. How and what approach should be pursued? Is the product, for example, in the skin care category? A soothing lotion? For example, Vaseline Intensive Care. What fragrance best conveys the concept of mildness? Should a conventional approach be used, as a muguet touched with benzaldehyde or blended almond note? Or should it be more strictly floral as an

apple blossom modified with ylang and a light, green touch of an artificial violet leaf? The possibilities in the multifloral field are numerous. If the concept is one of freshening there are many versions of citrus, especially when blended with a jasmin note. These may be as simple or as sophisticated as the perfumer wishes. The chemist has introduced new stable citrus notes as methyl octyl acetaldehyde and agrumenaldehyde. The jasmin feature is equally capable of variation using chemicals such as dihydrojasmonone, hexenyl esters and the jasmonates. Luxury? Will the often-used complex of methyl nonyl acetaldehyde and undecalactone added lightly to a mossy ylang base fit the requirement?

Is the product to be a new detergent with superior cleaning properties? What odors suggest cleaning and strength? Added to the choice of fragrance type are the factors of cost, residual odor on laundry, and stability in the product. For lead notes perfumers have used the clean effects of lavandin oil, citronellol, amyl cinnamic aldehyde with lemon notes and, even though low in stability, blends of citrus terpenes. For middle notes in the theme ionones, simple jasmins, coumarin, and for residual, blends of the synthetic musks. Formulas tend to be simpler than for blends used in cosmetics and colognes and the themes more bold.

The above offers leads as to how the perfumer may answer the questions which face him as a concept is presented, also how selection is made of an appropriate theme from among the possibilities offered by a multitude of odor notes, complexes and aroma chemicals. Analysing the process, there is a sorting out of the olfactory impressions prompted by the concept. The perfumer needs opportunity to "dream," to match imagined profiles with combinations of odorants. Judgment determines the initial steps in the process of creating a fragrance.

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The knowledgeable critic may object that more often than not the perfumer "borrows" a fra-

grance theme from another product line and adapts it to the new use. This is tempting and is often done when haste is indicated.

The author can cite two successful instances. A Bluegrass type blend employed in a lotion was modified to provide a fragrance for a dishwashing liquid, reducing the lasting sandal components but retaining the complex of lavender, muguet and ylang. Throughout the formula naturals were replaced by synthetics to lower costs and avoid procurement problems. A perfume for a deodorant soap was revised to fit the perfumer's concept of an appropriate blend for a liquid laundry detergent. Chief among the changes were removal of easily hydrolyzed esters and use of notes to mask odors from detergent actives. In both of these instances knowledge of the key notes, modifying aroma materials and proportions aided the perfumer in this "borrowing" for another product. It should be noted that the decision to modify an existing perfume is a judgment.

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If the decision is to start from "scratch" where is the beginning? From the imagined profile comes the theme and only the perfumer can judge what odorants support that theme. Perhaps the start is with a key, a combination of a very few odorants or notes which fit together to form the core of a composition. Perfumers discover from time to time such simple blends in which each component seems to enhance the others and the odor effect of the mixture is different from any component. Simple examples are the previously mentioned methyl nonyl acetaldehyde and undecalactone and the effect of para methyl acetophenone on spice mixtures containing eugenols. Simplicity is the use of a minimum of odor notes, each of which is only as complex as is needed to achieve the effect harmoniously.

The best proportion will only be found by experiment for a particular use. Also there are variations on each of these components which will affect the final rendition. One complex already mentioned is the Bluegrass type fragrance which depends on the blend of lavender, ylang and muguet. Another is one used in a once well known toilet soap. It is based on petigrain and amyl cinnamic aldehyde with a mixture of cinnamates. Another results from the blending of amber, arnica and jasmin notes.

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As the formulation is enlarged from the central theme the perfumer judges the results of experiments in which supporting notes are introduced, exchanged, proportions modified, all to achieve optimum balance, strength and that lively play among odorants which exists in a true fragrance. These judgments are critical to an ac-

ceptable rate of progress in reaching the perfumer's objective.

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From an early stage the perfumer should judge how preliminary blends perform in the medium of the product. This is another way of stating that frequent incorporation of the oil as it is compounded into the product will give clues as to compatibility from odor and stability aspects. Optimum proportions in the oil may not be optimum in the product or when the product is used. Imbalance can be observed on occasion when a seemingly well compounded perfume is incorporated in a two phase product or emulsion. Failure to test the early blends may cause difficulty in attempting to correct a formulation later. This precaution applies also to the masking of base odors in a consumer product. Testing in the product as formulation proceeds can result in more effective masking and can avoid revision of more complex blends. The recommended tests of the oil as it is being developed can also give early notice of lack of stability or a product change such as discoloration.

The interpretation of the results of these experiments as the formulation continues forms the basis of judgments that the perfumer must make again and again. This is not to suggest that formulation of a fragrance follows a series of sequential steps from the germ of an idea to the point of success. A perfumer should carefully observe the effect of each change in the composition and test its effect on the product in which it will be used. In each formulation there are many backward steps where judgment results in replacement or altered proportioning of notes. The good judgment and experience of the perfumer are the keys to how straight is the path of development.

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What should be done after the perfumer judges that the intended profile has been achieved? For one, a discussion among fellow perfumers is usually helpful in pointing up weaknesses, such as overuse of some feature or chemical, or in suggestions for strengthening a note in the profile. None of us is totally free from blind spots in our perceptive process and the judgment of others skilled in the art should be sought.

Another step is an evaluation of the product by a nonperfumer who is appreciative of fragrance and acquainted with a range of consumer products. Comments from this source provide judgments based on the whole fragrance rather than analysis of the components as might be made by a perfumer.

Use of an odor evaluation group to select the right perfume for a customer as is the practice in many companies should be considered an aid to the perfumer. Although the submitted fragrance

may be rejected by the panel, their comments and criticism can be applied to the next formulation. Each of the above evaluations would supplement the judgment of the perfumer.

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Some comments on techniques perfumer uses to make judgments seem in order. Much of the perfumer's assessment of progress in the early formulation is performed on the concentrated oil. In sniffing a blotter strip the perfumer is urged to first form a mental picture of the intended profile. Then use the sniff to answer a question, as, did the last addition bring the profile closer? Over sniffing or dallying over the blotter strip dulls perception and accomplishes little. Technique is important in judging the performance of a perfume in the product whether the tests are applied to the finished perfume, to intermediate stages or to single aroma materials. For example, accelerated aging of a perfumed soap is a widely used procedure, but high surface moisture and temperature may cause abnormal reactions which would never occur normally. Conversely drying of the surface will prevent reactions between soap and perfume constituents which can happen in a wrapped bar when case-stored. These show the need for good judgment based on sound technique.

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Judgment is important in the maintenance of good quality for the contents of the bottles from which perfumes are compounded. Frequently I have observed perfumers working with oxidized oils or overage chemicals. Care should be taken to see that only fresh oils and chemicals are in shelf bottles. Otherwise laboratory blends may be impossible to duplicate in manufacture. It is good practice for the perfumer to judge the identity and quality of the contents each time a bottle is used.

Citrus oils, especially lemon, bergamot and mandarin are susceptible to oxidation of their terpenes. This is accelerated by light. The straight chain aldehydes from C_8 to C_{14} oxidize and polymerize. This is especially true of lauric and myristic. Benzaldehyde and anisaldehyde undergo reaction to reduce aldehyde content. Phenyl acetaldehyde and its homologs are especially prone to change. Ionones slowly develop a foreign "winey" odor.

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This analysis emphasizes the kinds of judgments the perfumer must make in the process of creation of a fragrance. The perfumer must be capable of an imaginative approach, be able to objectively evaluate his work through sound testing techniques, be able to make correct decisions, and have a thorough knowledge of the aroma materials with which he works.