Smellscape

by J. Douglas Porteous

They haven't got no noses
The fallen sons of Eve . . .
And Quoodle here discloses
All things that Quoodle can,
They haven't got no noses,
They haven't got no noses
And goodness only knowses
The Noselessness of Man.
(Quoodle)

Who among us has not witnessed the impatient dogwalker tugging the leash of a rooted, sniffing animal, shouting: 'Come on, there's nothing there', and thereby acknowledging the dog's ineffable superiority in the matter of smell? Dogs live in a world of scents:

The brilliant smell of water,
The brave smell of a stone,
The smell of dew and thunder,
The old bones buried under.
(Chesterton, 1958, 163)

We cannot appreciate Quoodle's celebration. Most of us are likely to perceive only the unearthed old bones, and such smells are rarely enjoyed by humans.

The human sense of smell may once have been keen. It is likely that aboriginal groups, such as Australians and the Ksan, use their sense of smell to an extent not much different from that found in other animals (Lowenstein, 1966, 173). But the general reduction in size of the huge hominid snout has been accompanied by the atrophy of olfaction. Up to 90 per cent of our perceptual intake is visual, and much of the rest is auditory and tactile (Porteous, 1977; 1982). Unlike many other animals, we rely on shape and colour for distinguishing objects and inhabit a smell-poor sensory environment.

Yet smell is immensely meaningful to humans. Combined with gustatory sensations, it is responsible for flavour in foods. It is an efficient warning device against contamination. There may be an olfactory component in sexual attraction, and a human pheromone has been isolated (*'Attract girls!* Our pheromone female attractant spray makes men desirable, attractive, virtually irresistible to women! Guaranteed!').

This importance in the matter of food, disease and sex suggests a basic species-survival function for smell. On the other hand, westerners seem keen to eliminate their personal smells, replacing their erased bodily secretions with perfumes derived from, or surrogates for, the bodily secretions of other mammals.

Further, smell is an important sense in that it is primarily a very basic, emotional, arousing sense, unlike vision or sound, which tend to involve cognition. Certain smells are, therefore, deeply meaningful to individuals. The smell of a certain institutional soap may carry a person back to the purgatory of boarding school. A particular floral fragrance reminds one of a lost love. A gust of odour from an ethnic spice emporium may waft one back, in memory, to Calcutta. And above all, as we shall see, smells can be memory releasers for the reconstruction of one's childhood.

Except in the realms of neurophysiology and psychology, little research has been done on smell. Checking through the planning literature on urban aesthetics from the early 1950s to 1984 I find considerable lipservice has been paid to the obvious notion that the urban environment is a multisensory experience. We are enjoined to study smell, sound and taste. But this, inevitably, is an initial ploy which is followed by discussion of merely visual aesthetics. The landscape assessment literature is worse, for here the issue is almost always 'visual quality' and practitioners continue to visualize framed landscapes in neopicturesque terms.

A number of environmental psychologists have given passing mention to the subject of smell. Among geographers, only Tuan has devoted even a few pages to olfaction (1977, 10–13; 1982, 125–26). Bunge and Bordessa (1975) give smell two paragraphs in their description of a Toronto neighbourhood. Environmental smells seem to elicit few remarks from observers in North American cities, but appear to be more important to children and urban Mexicans (Rapoport, 1977).

Environmental aestheticians have called for a more thorough investigation of the environmental aspects of the non-visual senses (Porteous, 1982). This essay will, therefore, pioneer the exploration of the landscape of smell, beginning with an overview of recent findings in psychology. Using the triad person-time-space as an organizing framework, I will investigate smell as a function of person, of place and of time. Considerable attention will be paid to the role of smell in memory and childhood, and to the possible applications of smellscape studies.

I Psychological bases

Olfactory research in psychology has progressed remarkably since William James (1893, 69) asserted that nothing was known of the chemical senses. Speculation about smell can, of course, be traced back to classical Greece, but modern scientific study began with Zwaardenmaker in 1895 (Boring, 1942).

There remains much confusion concerning a basic classification of odours. Categories range from a minimum of four to a maximum of forty four, but the mode is close to the magic number seven, plus or minus two. In 1756, Linnaeus

suggested seven classes, named aromatic, fragrant, ambrosial (musky), alliaceous (garlicky), hircine (goaty), foul and nauseating. Note that four of these categories are defined hedonically. Two hundred years and much research later, Amoore (1970) also decided upon seven classes, considerably congruent with the Linnaean system: ethereal, floral, musky, pepperminty, camphoraceous, pungent and putrid. By analogy with the colour spectrum, it is claimed that all scents are combinations of two or more of the primary odours or of their many subclasses.

Boring (1942, 437) suggested that, in the 1940s, the study of smell was at the same scientific level as that of sight and hearing in 1750! Thanks to recent work in Scandinavia and by the research team led by Engen at Brown University, the gap has now been reduced, although much remains to be learned about odour stimuli, acuity, coding and memory. Some of the more important findings, largely based on Engen (1982), are presented here.

The concept of adaptation is vital. The perceived intensity of a smell declines rapidly after one has been exposed to it for some time. Not that the smell disappears, but the perceiver becomes habituated to it. Thus aversion therapy using smell is not very effective. In everyday terms, one's house has a characteristic smell readily perceived by visitors but apparent to the occupant only after having been away from home for some time. This habituation effect is crucial to humanistic studies, for it will be apparent in later discussions that almost all literary descriptions of smells (with the important exception of childhood memories which are distanced in time rather than space), are the work of non-residents. Thus in the humanistic study of smellscapes, as elsewhere, the insider:outsider antinomy (Relph, 1976) is a crucial one.

A second inportant feature relates to the psychology of hedonics. Of the estimated 400 000 existing odourous compounds, Hamanzu (1969) estimates that only 20 per cent are regarded as pleasant by humans. Further, there appears to be a strong tendency to judge unfamiliar smells as unpleasant; this relates to the concept of habituation. A matrix with pleasant/unpleasant and familiar/unfamiliar dimensions would yield an overwhelmingly high incidence of odours in the polarized familiar/pleasant and unfamiliar/unpleasant cells. This relates to the alerting, warning, function of smell, and provides some support for the importance of the insider (familiar):outsider (unfamiliar) antinomy in smell perception.

Vast individual and group differences in the sensory response to smell are a third major finding. Although all persons are likely to judge an unfamiliar smell as unpleasant, the same smell may be familiar and pleasant to one individual but unfamiliar and unpleasant to another person. This is a common experience of outsiders, such as tourists, inner-city visitors to farms, and urban newcomers to country living. Industrial occupation is also an important factor. Besides the distinctive odour of coastal fishpacking, the western Canadian smellscape contains both 'sweet' and 'sour' regions, product respectively of timber processing and natural gas drilling. The rotten-egg smell of gas can drift for scores of miles, and occasionaally envelops the cities of Calgary and Edmonton. Although such smellscapes may be offensive to city dwellers, modern Canadian folklore includes the pulpmill

worker who tells the offended middle-class environmentalist that the sulphite odour of his plant 'smells of money', a variation of the old Yorkshire saying, 'Where there's muck there's brass'.

Further, odour tolerances and preferences appear to be age-related. Children are much more tolerant of basic body smells, such as sweat and faeces, than are adults. Few smell preferences are innate (Engen, 1979); most are learned, again stressing the importance of cultural adaption and insideness. There is, in fact, little evidence that universally pleasant or unpleasant smells exist, unless the almost universal adult dislike of the faeces odour can be so considered. However, generalized preferences, at least among westerners, appear to favour natural scents from flowers, fruits and vegetables (Montcrieff, 1966). Generalized dislikes, in contrast, include many chemical and synthetic smells, especially those emitted by chemical factories, food-processing plants, refineries, garbage dumps, and most of all, engines, especially diesel engines. Given such generalized preferences, it is unfortunate that the majority of people in industrial societies is confined to urban areas dominated by machine-kind.

Finally, psychological research indicates that olfaction seems to stimulate emotional or motivational arousal (Engen, 1982, 129), whereas visual experience is much more likely to involve thought and cognition. Vision clearly distances us from the object. We frame 'views' in pictures and camera lenses; the likelihood of an intellectual response is considerable. By contrast, smells environ. They penetrate the body and permeate the immediate environment, and thus one's response is much more likely to involve strong affect.

Useful concepts derivable from psychological research, then, include habituation, major individual differences, age-related preferences, generalized dislike of urban and industrial odours, strong emotional reactions to smell, and a general negative view of environmental smells. Unfortunately, psychophysical and psychological researchers tend to dismiss non-laboratory work as 'subjective', 'descriptive', 'non-explanatory', or 'anecdotal' (Engen, 1982). There have been very few naturalistic field studies of odour perception. This is a severe restriction on our understanding of the phenomenon. It is my contention, however, that humanistic studies, if coupled with scientific work, can significantly enrich our understanding of olfaction.

II Smellscape

The concept of smellscape suggests that, like visual impressions, smells may be spatially ordered or place-related. It is clear, however, that any conceptualization of smellscape must recognize that the perceived smellscape will be non-continuous, fragmentary in space and episodic in time, and limited by the height of our noses from the ground, where smells tend to linger.

Smellscape, moreover, cannot be considered apart from the other senses. Many smells provide little information about the location of their source in space. Yet it

is common experience that smells are not randomly distributed, but are located with reference to source, air currents, and direction and distance from source. In combination with vision and tactility, smell and the other apparently 'non-spatial' senses provide considerable enrichment of our sense of space and the character of place. We are all familiar with the fact that places may be characterized individually, or even typed, by smell, from the smell of India, of Mexico, of the London of a generation ago during a 'pea-souper', of Los Angeles today during a smog alert, to hospitals and the smoking section of the rear of a passenger airplane.

A major problem in studying the non-visual sensory landscape is the general lack of an appropriate vocabulary. I incline to 'smellscape' and 'smell' rather than 'odourscape' and 'odour'. Synonyms for smell are rarely positive (fragrance), often neutral (odour, scent) and frequently negative (stink, stench, reek, pong, hum), while particularly bad smells may be adjectivalized as 'noisesome', a basically auditory term. The metaphoric load carried by smell is ambivalent. We may be in bad odour, and thus unlikely to achieve the odour of sanctity. I smell a rat and sniff it out, savouring the sweet smell of success. Further, individual smells are often difficult to describe or name, even though instantly recognizable. This verbalization difficulty is known as the 'tip-of-the-nose' problem (Lawless and Engen, 1977).

A basic spatial vocabulary can be derived from soundscape studies (Schafer, 1977). Soundscapes consist of sound events, some of which are soundmarks (cf. landmarks). Similarly, smellscapes will involve *smell events* and *smellmarks*. Eyewitness is replaced by earwitness and *nosewitness*. Visual evidence becomes hearsay and *nosesay*. The heightening of visual perception becomes earcleaning and *nose-training*.

Surveys and mapping of smellscape may perhaps be performed via *smellwalks* (cf. soundwalks and the Lynchean 'walk around the block'). Environmental assessment of smells can be undertaken by questionnaire and interview surveys of the general population, or by teams of highly-sensitized, nose-trained experts. A World Smellscape Project might match the current World Soundscape Project (Truax, 1978), but would find great difficulty in recording. Historical research, in particular, must rely on nosewitness (compare oral history), but is likely that insiders may not be the best witnesses because of habituation. Recent soundscape work, for example, has cast doubt on the World Soundscape Project's use of elderly residents of a locality as expert earwitnesses (Porteous and Mastin, 1985). The value of the elderly as respondents is also reduced by the general decline in sensitivity, discrimination and recognition of sounds, smells and tastes with advancing age (Colavita, 1978; Schiffman, 1979).

One alternative is to explore the depiction of smell, both spatially and temporally, in literature. The use of odour in literature emphasizes that while one may stand outside a visual landscape and judge it artistically, as one does a painting, one is *immersed* in smellscape; it is immediately evocative, emotional and meaningful. Literature, largely British and twentieth century, provides ample data for the discussion of smells of persons and landscapes in space and through time.

III The smell of persons

Personal smells vary according to race, ethnicity, culture, age, sex and class. North Americans attempt to banish personal smells and secretions, and prefer floral perfumes, whereas in the east 'perfumes are heavy, intriguing, sleepy and mildly intoxicating' (Montcrieff, 1966, 297). Early twentieth-century British writers were astounded by the use of patchouli in the Balkans; until recently, continentals were far less averse to male perfumery than the abstemious British (Lowenstein, 1966). The milky smell of babies is often liked, whereas the smell of old people or the sick is avoided. An odour of sanctity pervades the corpse of a saint. No war novel is complete without reference to the sweet stench of bloated human remains.

The Viet Cong were reputedly able to scent American troops by their cheesy odour, product of a high consumption of milk derivatives. It may no longer be appropriate to mention the highly-differentiated smells of the basic human racial groups. In a less anxious age, however, Graham Greene recalls the smell of his Liberian carriers during a trek through the bush:

> it wasn't an unpleasant smell, sweet or sour, it was bitter, and reminded me of a breakfast food I had as a child . . . something vigorous and body-building which I disliked. The bitter taint was mixed with the rich plummy smell of the kola nuts . . . with an occasional flower scent one couldn't trace in the thick untidy greenery. All the smells were drawn out, as the heat increased . . . (Greene, 1971a, 78).

It is significant that Greene records these smells on the first day of the trek; thereafter his record of smells is non-existent.

The northern races have their own peculiar odours. Maclean (1964, 54) records interwar Russian peasants as 'gnarled beings whose drab, ragged, sweat-soaked clothes exhaled a sour odour of corruption'. Numerous childhood reminiscences of English rural life record the strong, wild, acrid smell of gypsies, a compound of body, food, and woodsmoke. Irish labourers were also singled out. Kitchen (1963, 44) came across a group of Irish farm workers boiling potatoes: 'The potatoes smelled good, but the Irishmen didn't'. Less judgemental was Alison Uttley, who was proferred 'a penny with the Irishmens' smell all over it, which she kept in a little box, safe with its penetrating odour, to remind her of them when they were far away' (Uttley, 1931, 201).

These may be class smells, for the social classes were, until a generation or two ago, readily distinguished by smell. Labouring peoples' work was dirty and promoted sweating, yet their sanitary arrangements prevented complete cleanliness. Conversely, the well-off sweated less and could wash more. Little wonder, then, that the working classes were long noted for their offensive smell, from Shakespeare's crowds in their sweaty nightcaps to Huxley's (1977, 55) painfully sensitive Denis: '. . . how unpleasant the crowd smelt! He lit a cigarette. The smell of cows was preferable'. George Orwell's forays into the foreign fields of Burma, Spain and working-class northern England resulted in writings rich in smells. Sensitive to the prevailing interwar notion of the elite that the working classes stank, he nevertheless

painfully recorded their odoriferous peculiarities, to the intense discomfiture of bourgeois communists.

Within the mass of 'great unwashed', of course, some individuals smell much more rankly than others. The limits of tolerance are met in Roberts's *Ragged schooling* (1976, 40) in the persons of the homeless outcast Ignatius and the 'two girls who lived behind the fish frier's you could smell . . . at a distance of six feet'. As a school boy, H.E. Bates (1969, 42) was especially indignant at being made to 'sit next to a boy who stinks'. This smell event remained strong in his memory: 'the peculiar acrid stench of the unwashed lingers in my nostrils'. I can confirm the importance of similar episodes, my rural childhood being well-stocked with poor children, Irishmen and gypsies, whose smells, however, seemed much less important than their interesting selves.

Kitchen's unpleasant encounter with Irishmen was redeemed by a girl who smelled of violets (Kitchen, 1963, 159). In *Lolita* (Nabokov, 1959) Humbert Humbert smells little except his nymphet, a compound of cheap perfumes with the occasional 'hot breath of popcorn'. Tereza Batista's men are distinguished by their smell, from the dry woodsy aroma of the doctor to the salty sea-smell of Januario's chest (Amado, 1977). Amado's more famous novel is *Gabriela: clove and cinnamon* (1978), the title outlining the heroine's chief physical characteristics, her smell and her colour. Aldous Huxley, wishing to acknowledge distaste for one of his characters, names him Mercaptan, ethyl mercaptan being the smell of the skunk (Huxley, 1948). More intimately, and pleasantly, Charles Kingsley, author and priest, writes to his wife that his 'hands are perfumed with [your] delicious limbs, and I cannot wash off the scent' (Chitty, 1974, 82).

IV Smell in space and place

People are identified with place, and thus become components of a general smellscape. Some smellscapes are large; world geographical regions can be defined *inter alia* by intersubjective odour impressions. Almost invariably, for the reasons already noted, odourous descriptions are the work of outsiders.

No account of India, from Kipling to the recent popular novels of M.M. Kaye and the accounts of Geoffrey Moorhouse, fails to invoke the peculiar smell of that subcontinent, half-corrupt, half-aromatic, a mixture of dung, sweat, heat, dust, rotting vegetation and spices. The intimate relationship between smell and the exotic, smell and the primeval urges, is exemplified by Kipling's joyous celebration of India's 'heat and smells and oils and spices and puffs of temple incense and sweat and darkness and dirt and lust and cruelty . . .' (Fitzgerald, 1983).

Africa is equally well-served. Native African writers, such as Ngugi wa Thiong'o, rarely supply significant smell descriptions, unless referring to the impact of the city upon a rural African. White visitors, however, associate certain smells with the continent, as when Greene (Atkins, 1966, 67), smelling the smoke drifting over the sea from Freetown, Sierra Leone, exclaims that 'it will always be to me the smell of Africa'.

White Africans, however, are aware of greater detail than a simple capsule odour. Entering a 'native slum', the white is overcome by visual, auditory and odorific sensations, especially the stench of 'urine and dung and rotting meat' (Ruark, 1964, 97). Indian bazaars in Nairobi, in particular, are redolent of the Orient:

> The howling, reeking bazaars, where every smell known to the East was mingled in one magnificent ripe stink of rotting fruit and dust and dung and curry powder and wet plaster and no plumbing and ancient filthy habits (Ruark, 1964, 97).

It is notable that the same author never conjures up the smell of white Africa, and rarely goes beyond sound and visual impressions when dealing with blacks, except when black Africa meets white and scents a contrast:

> Today he wanted to play nigger. Today he had a great deal of thinking to do, and he did not want to do it permeated by the white smell – the smell of the white man, the white man's food and drink and clothing, the greasy stink of the white man's petrol fumes and belching diesel exhausts. He wanted to do his thinking surrounded by the smells with which he had grown up, the comfortable smells of wood smoke and the acrid reek of goats and the old greasy odour of the hut in which the food was cooked and children born and goats kept at night for safety . . . (Ruark, 1964, 149).

The smell of the internal combustion engine has become normal in the cities of the third world, as in the north. For Malcolm Lowry (1972, 115) the Mexico City of the 1930s was chiefly noise and smell, and the smell was a compound of old and new, organic and inorganic, 'the familiar smell . . . of gasoline, excrement, and oranges'.

The occupation of the Falkland Islands by Argentine troops in 1982 heightened the contrast between Latin American and British cultures. Returning to Stanley after the restoration of British control, Ian Strange (1983) noted that the soundscape had radically changed because of the introduction of many more telephone lines. But smellscape changes were more important.

> To me the most striking feature was the smell of the town, a smell of a distinct nature I had noted on weekend evenings during a stay on the outskirts of Buenos Aires: a smell of wood smoke mixed with barbecued meat and seasoned sunflower-seed oil. Although not unpleasant, the wood smoke was alien to this little town, and it brought home yet another feature that demonstrated yet again how different the two cultures are at an individual level.

The third world, then, has its distinctive smell regions. One may distinguish Cuernavaca from Cairo from Calcutta from Canton by the nose alone. The urban-industrial world, however, is not immune to regionalization by olfaction. Here the great divide is east and west, first and second worlds, capitalist and communist. Few visitors to Russia have analysed so clearly the inescapable indigenous odour of that country as the Scot Fitroy Maclean, who becomes aware of it, like Greene in Liberia or Sierra Leone, immediately upon entering the country. His first perceptions, naturally, are visual; but, almost simultaneously:

> It was then I first noticed the smell, the smell which, for the next two and a half years, was to form an inescapable background to my life. It was not quite like anything that I had ever smelt before, a composite aroma compounded of various ingredient odours

> inextricably mingled one with another. There was always, so travellers in Imperial Russia tell me, an old Russian smell made up from the scent of black bread and sheepskin and vodka and unwashed humanity. Now to these were added the modern smells of petrol and disinfectant and the clinging, cloying odour of Soviet soap. The resulting, slightly musty flavour pervades the whole country, penetrating every nook and cranny, from the Kremlin to the remotest hovel in Siberia. Since leaving for Russia, I have smelt it once or twice again, for Russians in sufficiently large numbers seem to carry it with them abroad, and each time with that special power of evocation which smells possess, it has brought back with startling vividness the memories of those years (Maclean, 1964, 11).

Yet Maclean later notes, on penetrating Soviet central Asia, that the cold musty smell of Russia diminishes as the ambience becomes warmer and more 'Eastern-smelling' (p. 68).

Maclean fails to mention boiled cabbage in this passage. Yet is is notable that many western writers, wishing to evoke everyday life in totalitarian regimes, resort to the boiled cabbage smell. Boiled cabbage lingers pungently in the corridors and canteens of Orwell's *1984* (1954). It persists in numerous prison novels. It surfaces in schools, and is used as a reliable indicator of the hopeless, monotonous self-imprisonment of lonely people in boarding houses; Huxley (1978, 101), for example, laments the despair associated with institutional '*Crambe repetita*'.

Continents, countries, regions, neighbourhoods, especially 'ethnic' ones, and houses have their particular smellscapes. I can recall, for example, the exotic smells of India, the wild herb scents of rural Greece, the peculiar odour of Humberside mud, the smells of horse, sea, and grass on Easter Island, Italian pasta and aniseed in Boston's North End, Arab and Chinese food in its South End, the cedar kindling and dried alder in my woodshed.

The urban–rural distinction is clearly identifiable through the nostrils. In urban areas, as already noted, individual smell events are as figure to a ground of omni-present vehicle vapours, dimly-perceived because of habituation. Individual cities, even urban types, may be distinguished by smell. Pulpmill towns, colliery towns, leather-working towns, chemical towns, smelting towns, each has its particular type of smell. The small town of Tadcaster, North Yorkshire, home of three breweries, can be distinguished afar by the rich, thick smell of brewing. Nearby Knottingley has an equally rich, biting, scent of creosote and tar.

In heavy industrial centres such smells were associated with pollution. Until well after the second world war, however, every small English town had its gas-works, where coal was gasified for the supply of the town. It was a sweet, sickly, and ultimately poisonous smell. Roberts tells of the 'noxious vapours' which borgeois environmentalists claimed had killed a Salford wood early this century. Less concerned with trees than human health, he retorts:

> These same 'noxious vapours' we ourselves breathed in concentrated form: our own streets stood immediately under the gasworks in the path of the prevailing winds. Sometimes the air stank abominably for days on end. But very few questioned the right of industry to ruin our health and environment in pursuit of profit. The poor were expendable (Roberts, 1976, 133).

Not only expendable, but also invisible and unsmellable. It is not by accident that

the west ends of English cities are located upwind of the east ends where live 'the great unwashed'.

Judging by accounts such as Roberts's, most urban smells were evaluated negatively. Some individuals, such as Roberts's father, 'used to damn the odours endemic to [the] neighbourhood' (p. 39), but in general the working classes had to adapt to noxious fumes while the well-off moved to suburbs or countryside.

In contrast, accounts of country life, even among the poor, are far more positive with regard to smellscape. Analysis of Beckwith's (1973) autobiography suggests tht while most urban smells are negatively rated, almost all rural smells are regarded as positive. The cottages of the poor were of course the scene of bad odours based on inadequate sanitation. Cottage life was idealized by the Victorian middle classes, armed with sketchbooks; *Punch*, however, had a different view, at once satirizing middle-class visual perceptions and pointing out the grim reality of another sensory modality:

> The cottage homes of England
> Alas! How strong they smell.
> There's fever in the cesspool,
> And sewage in the well.
>
> (Woodforde, 1969, 5)

There was, of course, but 'country children and their parents [were] supposed to be accustomed to strong smells' (Horn, 1976, 58).

Moreover, smelly cottages could soon be left behind for the more positive smellscapes of farm and field. At the farm was 'the sweet smell of the cows and the ringing of the milk against the zinc pail' (Ashby, 1961, 168). In the fields, 'the faint weedy smell... from the river' and again, 'the sweet animal smell of cows' (Huxley, 1978, 118). In farmhouses:

> The kitchen had the warm, half-buttery, half-milky smell in which was also mingled the odour of cows and cow manure. There was also about the entire house an ancient and church-like smell, strong with woodsmoke and dampness (Bates, 1969, 166).

On the coast, 'the smell of the sea, of seaweed drying in the sun, of plaice being fried for breakfast, of horse-dung and the whiff of vinegar from whelk-stalls' (Bates, 1969, 72). But on the road, 'a pile of soddened dung always steamed on the air, the ammoniac sting of it powerful enough to kill even the aroma of baking' (Bates, 1969, 70).

Early twentieth-century rural smellscapes, then, were redolent with the odours of animals, notably horses and cows. That vegetation was also important in the smellscape will be seen below in the section on time. Late twentieth century rural places, now well-supplied with prepackaged food, with high rates of automobile usage, and with factory farming, have lost their distinctive odoriferous character. Indeed, the massing of animals in production-line industrialized agriculture has become a major source of rural smell pollution.

Whether urban or rural, smells identify places in the lived-world. This especially apparent in H.E. Bates's *Vanished world* (1969). Bates was repelled by the local

boot factory with its 'stench of leather and gaslight' (p. 36) and hardly more pleased by long waits in the barber's, where 'the smell of shag, after two or three hours, had the power to move mountains' (p. 37). Much more preferable was the bakery: 'There was always a great heavenly warmth about it, together with the even heavenlier fragrance of new-baked bread' (p. 70). Indeed, in a few pages Bates provided us with a complete smellscape, not of a house and garden, as with Proust, but of the significant components of a small agrarian town.

Finally, early twentieth-century travel was associated with smells one is unlikely to perceive today. The town child was delighted with the sensuous quality of a horse-brake:

> . . . the gleaming brass and neatsfoot oil of the harness, the odours of horse-flesh and horse droppings, the summer dust, the harsh crunch of metal wheel rims on the rough stones of the road (Bates, 1969, 32).

In contrast, a rural farm labourer is pleased with the new bus service in the 1930s, but still has much regret for the sensuous quality of former travel modes:

> In one thing would the carrier's cart beat the modern bus, and that was in the variety of smells. There was tarpaulin over all. Then came leather, then apples and cow-cake, with occasionally a calf or a crate of chickens (Kitchen, 1963, 92).

Speed and convenience have clearly been paid for in terms of odoriferous pleasure. Bates's (1969, 85) reaction is clear when he speaks of the advent of the 'horseless carriage stinking of oil and petrol'.

V Smellscape in time

There appears to be no general history of environmental smells. Social historians of Britain give but passing mention to ambient odours. Yet it is clear that any future historian of the smellscape would have to include: the medieval ripeness of houses, persons and foods; the characteristic smells of 'occupational' streets in pre-modern towns, from Bristol's Milk Street to York's Shambles, where one would have encountered the raw reek of butchery and blood; the changes in country scents that came with the planting of many miles of thorn hedges during Enclosure; the animal odours of cities before the development of long-distance milk transport and mechanical intraurban conveyances, and the like.

The development of empire was clearly responsible for the diffusion of exotic smells into traditional smellscapes. I think of the 'British' smells of the Indian sub-continent: railways; the English flowers of Indian hill-stations; the characteristic smells of drains, Christian churches, and hollyhocks in Rangoon. The process was a two-way one; Victorian gardeners radically altered English smellscapes by importing and acclimatizing hundreds of alien species of flowering plants. In the present century, the growing homogenization of the world smellscape, under the pressure of American-style 'sanitization' in housing, clothing, and food packaging and display, is a process worthy of study.

Perhaps the most striking change, still possibly accessible to oral historians, is the fairly recent adaptation of huge urban populations to a basic 'keynote' smell compounded by metal and oil products. On the more positive side, late twentieth-century pollution legislation has considerably reduced our opportunity to experience the formerly characteristic odour of British cities, compounded of coal fires, industrial processes and smog.

In this essay, however, I am chiefly concerned with smells which may be personally experienced on a cyclical basis, smells which recur daily, weekly, seasonally, or annually. Smells vary both from day to day and throughout the day. Frosty or dewy mornings are especially conducive to smell generation. At daybreak and at dusk smells are especially apparent. Weather conditions are important, for rainstorms may stir up 'a rich smell of elder flower, hemlock, and dogroses' (Kitchen, 1963, 240). The landscape smells clean after rain.

The first half of the twentieth century was noted for its weekly smell events. Domestic economy required washday and baking day. Washday occurred on Mondays and children were fascinated by its smells of heat and moisture, to be followed by 'the hot smell of iron on calico' (Ashby, 1961, 109). Baking day was even more odourous, when 'the house smelt rich and sweet of cakes and buttermilk scones and hot jams' and 'men and boys came in to enjoy the orgy of heat and scent and promise' (Ashby, 1961, 209, 215).

Smells are also indicative and evocative of seasonal change. English villages 60 years ago abounded in seasonal odours. In early summer, at haymaking time:

> ... always the air in June seems to have been clotted with the intoxication of mown grass, or May blossom, of moon-daisies dying along the paling swathes ... the air full of the scent of it, mixed with the fragrance of honeysuckle and meadowsweet and an occasional pungent pong as the horse broke wind (Bates, 1969, 53, 86).

Few rural accounts fail to mention the smellfullness of haymaking, when 'all the air is full of scent and hazy mists' (Kitchen, 1963, 152). By late summer:

> ... down in the hollows, hovering in the crisp night air, drifted a most appetizing smell of herrings being fried for a late meal ... the warm night was sometimes fragrant with the scent of cut grass; and about this season too, the pungent odour of shallots lying out in the garden to ripen off came in soft whiffs across the hedges (Bourne, 1912, 11).

This is a blend of both season-specific and idiosyncratic smells, whereas for fall there is only one indicator smell: 'raking and burning weeds, the slow blue smoke and pungent smell of which is perhaps the most autumnal of autumnal things' (Horn, 1976, 71).

Even in winter, when the sense of smell may be deadened by cold, Kitchen appreciates the healthy 'heady smell' of farm manure; and 'the sweet smell of tobacco on a frosty morning' (Kitchen, 1963, 222). Indoors, throughout the winter, store-rooms 'smelled of applies, ripe and sweating and laid out ... for keeping' (Bates, 1969, 96). And in spring one returned to 'the smell of new-turned earth, the free life and the fresh air' (Kitchen, 1969, 129).

The seasons of rural Portugal are equally explicitly identified by non-visual cues.

'The mountain changes its scents and sounds throughout the year' (Jenkins, 1979). In spring the strong smell of eucalyptus fails to mask the wild rosemary or the strong apricot smell of chanterelles. The early summer scent of wild lavender on upper slopes and orange and lemon at lower elevations gives way to a general smell of heated earth in late summer, followed by the 'most delicious smell of all . . . the sweet freshness of the first autumn rains . . .' (p. 21).

Annual and occasional events are also recognizable by their associated smells. One recalls the musty smell of church, the deep smell of graveyard earth at a funeral, and the grave release of the rich-smelling 'ham tea' that followed. Or the crisp smell of new clothes at Whitsuntide, the rich animal smell of a new pair of shoes actually soled with leather, or the 'Flower Show . . . the most scented day of all the summer' (Ashby, 1961, 202). Irish country fairs are reported perhaps more realistically: 'The pleasant smell of fresh dung, the warm smell of animals, and old clothes, and tobacco smoke' (O'Brien, 1963, 129).

The loss of formerly familiar smells is also a measure of the passage of time, of modernization and change. Many palaeotechnic smells will rarely be smelled again. Few of us bake our own bread now. I well remember the sudden advent of soft, wrapped, sliced, steam-baked bread during my childhood in the 1940s. As if cognizant of their imminent deprivation, perceptive village children would mock (to the tune of 'Knees Up Mother Brown'):

> Jackson's shop-bought bread
> It stinks just like lead –
> No bloody wonder, farts like thunder,
> Jackson's shop-bought bread.

As in other areas of life, modernization drives out sensory quality.

Factory bread merely exemplifies the growing modern tendency towards homogenization and placelessness (Relph, 1976). As early as the turn of the century, there was considerable concern that as civilization tended to eliminate odours this would have deleterious effect on human sexuality and aesthetic life in general (Engen, 1982). Aldous Huxley, always *avant garde*, expressed this in novelistic terms. An English couple enter an Italian store, 'filled with a violent smell of goat's milk cheese, pickled tunny, tomato preserve and highly flavoured sausage'. The lady chokes, reaching for her Parma violets. The shopkeeper retorts:

> '*I forestieri sono troppo delicati*'. 'He's quite right', said Mr Cardon. 'We are. In the end, I believe, we shall come to sacrifice everything, to comfort and cleanliness. Personally, I always have the greatest suspicion of your prefectly hygienic and well-padded Utopias. As for this particular stink', he sniffed the air, positively with relish, 'I don't really know what you have to object to it. It's wholesome, it's natural, it's tremendously historical. The shops of the Etruscan grocers, you may be sure, smelt just as this does' (Huxley, 1978, 190).

Relph's fear of placelessness is expressed mainly in visual terms. He may be sure that the worldwide homogeneity of faceless glass buildings will be matched by continuous Musak and wholesale deodorization. The American motel bathroom, 'sanitized for your protection', is the antiseptic symbol of sensuous death. Because all environmental smells cannot be pleasant, we will have none at all.

VI Smell and memory

In environmental aesthetics the intuitive discoveries of humanists or writers are often confirmed, perhaps centuries later, by experiment (Porteous, 1982). Nowhere is this more true than in what is now described, by psychologists, as 'the Proustian hypothesis of odor memory' (Engen, 1982, 98). The adult Proust is irresistibly reminded by the beloved Combray of his childhood by the taste and smell of *petites madeleines*. He generalizes this effect as follows:

> But when from a long-distant past nothing subsists, after the people are dead, after the things are broken and scattered, still, alone, more fragile, but with more vitality, more unsubstantial, more persistent, more faithful, the smell and taste of things remain poised a long time, like souls, ready to remind us, waiting and hoping for their moment, amid the ruins of all the rest; and bear unfaltering, in the tiny and almost inpalpable drop of their essence, the vast structure of recollection (Proust, tr. Montcrieff, 1970, 36).

Recent psychological experiments (Engen and Ross, 1973; Engen, 1977) have confirmed that while we may distinguish between smells with only 20 per cent accuracy, we are able to remember these smells with almost the same degree of accuracy up to a year later. In contrast, visual recognition shows an almost 100 per cent accuracy within minutes of the original test, but this accuracy rapidly falls off with time. According to Engen (1982, 107–108) 'our data clearly support the observations of so many writers, as well as individual experiences [that] time seems to play no role in odor memory'. It is suggested that olfactory receptors are plugged directly into the brain's limbic system, the seat of emotion, and that this direct connection between smell and emotion had strategic evolutionary value for our ancestors (Gloor, 1978).

So significant was Proust's suggestion that many subsequent writers have used his smell-generated flashback technique. As early as 1925, Huxley uses the smell of an Italian bay leaf to take a character back through years of time to the bay rum of a London hairdresser (Huxley, 1978, 46). T.S. Eliot (1974) explicitly links smell with reminiscence in his world-weary urban evocations of 'female smells in shuttered rooms . . . smells of steaks in passageways . . . And cigarettes in corridors And cocktail smells in bars'. Less obviously mannered is Maclean's (1964, 523) meeting with Soviet forces in Yugoslavia: 'in a flash I was back in the Soviet Union: the taste . . . the stuffiness . . . the cold . . . and, above all, the smell: that indefinable composite aroma of petrol, sheepskin, and vodka, black bread and cabbage soup [there it is!], Soviet scent and unwashed human bodies'. Similarly, Graham Greene (1971b, 77) admits that 'Smell to me is far more evocative than sound or even sight', although his autobiographies, unlike his novels and travel accounts, are not notably smellful. Perhaps the most compelling odoriferous description in Greene is his vivid memory of the contrasting smellscapes on either side of the green baize door which divided an alien institutional school from a beloved home (his father was a headmaster): 'There would be a slight smell of iodine from matron's room, of damp towels from the changing rooms, of ink everywhere. Shut the door behind you again, and the world smelled differently: books and fruit and eau-de-Cologne' (Greene, 1947, 13).

It is less likely that Flora Thompson, an English village postmistress, had read Proust. Nevertheless, one of her characters

> . . . had smelled a beanfield in bloom. The scent had so vividly brought back to her the bean rows by the beehives in her father's garden that she had felt an irresistible longing to see her old home. She no longer had anyone belonging to her living in Restharrow and had not herself been there for 24 years, but the impulse was so strong it had to be obeyed (Thompson, 1948, 10).

The 'beanflower's boon' was a common feature of memories of Victorian rural summers.

Most of the early twentieth century reminiscences noted earlier are products of this sharp, emotion-laden memory we have for smell. Smell seems especially important in childhood, and adults tend to associate childhood and the childhood home with certain smells. Charles Kingsley, confessing to an insatiable *heimweh*, frequently mentions olfactory sensations: 'the very smell is a fragrance from the fairy gardens of childhood' (Chitty, 1974). Jung (1965) tells us that one of his first memories is that of being aware of the 'characteristic smell of milk . . . It was the moment when, so to speak, I became conscious of smelling. This memory . . . goes very far back'. And on his first visit to Tunis, archetypically, he felt that the landscape smelled of blood, of perennial soakings from Carthage to the French occupation.

It would not be difficult to fill volumes with examples of childhood smells remembered vividly 30 to 60 years later. Instead, however, I have taken four autobiographies at random from my shelves (three of English males who were children in the first world war and one of an Irish female whose childhood occurred during the second world war) and have content-analysed them (Table 1).

Although all were country or small town children with a strong predilection for hay, flowers and grass smells, and a distaste for musty rooms, considerable differences are apparent. Males find animal smells, including dung, especially attractive but fail to record food smells. Edna O'Brien is far more sexually conscious and more concerned with the smells of food, drink and cosmetics. The two rural males, raised in the preautomobile era, are appalled by car exhaust smells and city odours generally. By mid-century even Irish country girls have habituated to the automobile.

Olfactory memory, however, is a very personal matter. BB's predilection for tar and sheepwash are not necessarily shared by others. According to this writer, 'adults often forget how children are affected by smells, their sense of smell is much keener, more akin to a wild animal's' (BB, 1978, 91). To illustrate that an urban child's keen olfactory sense can bring equal richness to an autobiography, I have analysed the odour content of John Raynor's (1973) account of his London childhood.

Raynor was an exceptionally sensitive child. His book is filled with sights, sounds, smells, tastes, tactile sensations; it is extremely sensuous reading. The following list gives only the barest account of those smells that were sufficiently important in Raynor's childhood to be remembered in detail 30 years later:

Table 1 Smell content of four British autobiographies

Affect		BB (Male)	Bates (Male)	Greene (Male)	O'Brien (Female)
Positive (Neutral, bracketed)	1	hay, flowers, leaves grass, wood, sap	hay, flowers, blossom, woodsmoke	leaves, grass, hedge	hay, flowers, leafsmoke, turf, greenhouse
	2	sheepdung, (mice, dead flies, pigeon dung)	horsedung, cowdung, horseflesh, cows, horsefart	horse	animals and dung at country fair, (mice)
	3	herbs	fresh bread, frying fish, vinegar, apples	apples	frying bacon, roast meat, hot mince pies, tangerines, spices, apply jelly, cider, wine, whisky
	4	mud	damp earth		clay, (dust)
	5	tar, sheepwash, oil lamps, (paraffin, mothballs)		floor polish, detergent, coal dust, bookshop	incense, cigarettes, (paraffin, floor polish, chalk, hair oil)
	6			blacks' sweat, perfume, eau-de-Cologne	soap, skin, perfume
Negative	1	rats	rats		
	2	dry rot	dust	mustiness	stale, musty rooms, dust
	3	automobile, London	automobiles, gas leather factory, greasepaint		
	4		tobacco smoke, 'strong drink'		tobacco smoke, stale porter
	5			breakfast cereal, cornmeal	school cabbage, bad meat
	6		dirty children	changing rooms, urine, farts	old socks

Sources: BB (1978), Bates (1969), Greene (1971b), O'Brien (1963).

1) *of plants* – gardens, magnolia, honeysuckle, bracken, woods, bonfires of leaves, meadowsweet, flowers generally, (*not* hay);
2) *of food* – nuts, particularly 'the deeply sensuous pleasure' of almonds, toast and Patum Peperium, coffee and frying bacon, aromatic poultry stuffing;
3) *of buildings* – the Army and Navy Stores, Westminster Abbey, the Sunday drawing room smell, must and cobwebs, stone and dust, chintzes and other stuffs, a 'cool, damp-smelling stone building', cold stone, a dormitory, each room in the house with its own particular smell;
4) *of people and animals* – a horse-rug, father's pipe, tobacco, and shaving soap, mother's store-cupboard (rich and sweet), father's store-cupboard (nails and leather);
5) *miscellaneous* – earth, butterfly collection preservatives, plasticine, jewellery, magazines on bookshelves, a pub, trains, an imagined alligator, ghosts smelled and heard but never seen.
There are at least 50 distinct smells in a little over 200 pages, a rich experience indeed.

Raynor goes further than Proust, suggesting that emotive reactions to smell may not merely be idiosyncratic, but perhaps archetypical memories in the Jungian mode:

> Suddenly on the wind was borne the smell of the tannery. I stood, transfixed, dropping my flowers, turning green and white, gripped by . . . a horror so primitive that it would only have been a racial memory; a horror quite outside the bounds of thought or control; something that struck deep inside my body . . . Nothing could induce me to play on the common again [to encounter] the smell that was like the inarticulate agony, the frenzied terror of all the animals that have ever suffered . . . at man's intolerably callous hands (Raynor, 1973, 22).

Less controversially, Raynor is sure that the perceptions of children are so much sharper than those of adults. By adulthood, 'one has learnt too much cerebrally to put unquestioning trust in the primitive intuition and the incontrovertible knowledge that are an essential part of childhood' (p. 59).

Childhood, then, is a special time when the most primitive senses are open to all sensation, before we have been carefully taught 'four legs good, two legs bad'. Again, psychological experiments confirm intuition. There is some research support for the notions that small children are not necessarily offended by 'foul' odours such as faeces, and that the rating of a smell as 'unpleasant' is a direct function of age among children aged seven and under (Engen, 131–32).

Very little work, however, has been done on the importance accorded to smell through the human life cycle. From the evidence cited above, both humanistic and psychological, we might hypothesize that, with age, environmental smells become less noticeable and, when noticed in adulthood, are usually rated as unpleasant. From my reading of numerous autobiographies, I suggest that a sharp break in smell perception or odour memory occurs around the time of puberty. Both the Kitchen and Bates autobiographies cited above, for example, show a sharp decline in the recollection of environmental smells after age 15 or so.

To briefly test this proposition, I took at random eight twentieth-century works,

four autobiographies, two autobiographies rendered in fictional terms, and two fictional biographies. Using the significant age breaks of ages 7, 14 and 21, supported among others by Piaget and Freud, I then made frequency counts of smell events and related these to pages of text. The results are in Table 2. Although both conceptually and operationally crude, this exercise does suggest, first, that the richest period of odour sensation lies between the beginning of autonomous environmental exploration at about age seven and the onset of puberty, and second, that the importance of smell declines on the attainment of adulthood. It is also noticeable that on attaining adulthood these autobiographies increasingly record only female perfumes or the occasional obvious stink. Only a massive study of autobiographies or longitudinal empirical testing could confirm these hypotheses.

VII Applications

Whereas zoning regulations have only recently come to grips with the notion of visual pollution, both the legal concept of 'nuisance' and general urban zoning laws have long recognized smell as a problem. Noxious land uses, such as chemical factories, glue plants, and slaughter houses, must be adequately segregated from residential and commercial areas. Celebrated cases of nuisance include the foul smell of the Thames in London's Houses of Parliament and the olfactory aggression of a pulpmill on the sister institution in Ottawa. On the positive side, tactile museums for the blind have been matched by the construction of odoriferous gardens for the visually handicapped. Properly designed, such a garden can provide rich olfactory sensations, give directional information, and confirm the passage of the seasons. Commercially, odour is an important tool in marketing (Mitchell *et al.*, 1964).

Environmental odour, however, has generally been considered only as a negative problem. Just as soundscape is dominated by noise research, so the investigation of smellscapes is almost wholly devoted to odour pollution. A considerable amount of applied research in Scandinavia has dealt with olfactory evaluations of indoor air quality (Berglund and Lindvall, 1979). Traffic smells have aroused considerable interest (Lindvall, 1973). Since the late 1960s, a series of International Clean Air Congresses have dealt with problems of theory, measurement and application. The trend appears to be away from mechanical 'artificial noses' towards the use of public evaluation and olfactometry. Indeed, Engen (1982, 137) considers that 'the human nose may in fact be a better indicator than physical or chemical analysis of pollutant concentrations, especially when the data are obtained by investigators trained in psychophysics'.

About half of all complaints about air pollution involve smells. In Sweden complaints about odours range from 27 per cent of rural interviewees to up to 78 per cent in urban areas. Smell control technology includes odour dilution through heightening emission stacks and the use of scrubbers or combustion. Masking by the introduction of pleasant smells may be effective. Although still largely an urban

Table 2 Smell events per text page, × 100

	Autobiographies				Fictionalized autobiographies		Fictional biographies		
Age group	Bogarde (Male)	BB (Male)	Greene (Male)	Raynor (Male)	O'Brien (Female)	Proust (Male)	Aldington (Male)	Huxley (Male)	Mean
0–7	n/a	6	16	29	16	n/a	0	n/a	(13)
8–14	28	36	27	21	33	30	50	102	(41)
15- 21	8	20	6	0	27	7	10	96	(22)
over 21	4	8	4	0	16	9	0	101	(18)

Sources: Aldington (1965); BB (1978); Bogarde (1977; 1978); Huxley (1955); O'Brien (1963; 1964); Proust (1970); Raynor (1973).

issue, smell problems are increasing in rural areas. With the introduction of factory farming the noxious smell of animal manure has become a major rural problem. In Britain, the Institute of Environmental Health Officers investigated 3600 reported nuisances in 1981, 50 per cent more than in 1975. Of these complaints, 59 per cent concerned pigs, 27 per cent poultry, and 14 per cent cattle units. In terms of operations, 27 per cent of the incidents involved animal housing, 29 per cent the storage of manure, and 44 per cent the spreading of manures (Whitlock, 1982).

At the household level, smell masking devices and air fresheners are being replaced by electrostatic air cleaners. Salubrious smells can be programmed into the air conditioning systems of buildings. This, together with Musak and 'white noise', is yet another step in the regression of urban–industrial civilizations towards total asepsis. As Whewell (1982, 19) remarks, 'I don't abhor household smells. I like them, and so do most of my friends'.

On the positive side, it is clear that there is some public interest in the preservation or resynthesis of historic ambiences. To take only two recent examples, the new Viking Museum in York tries to recreate the smells (fish, leather, earth) of tenth-century Jorvik, while the smell of the Glasgow underground (subway) system was so addictive that 'people in the city have come up with ideas for recreating the smell . . . the search to synthesize the whiff of the past goes on. And the idea of preservation takes on a whole new dimension' (quoted in Goodey and Menzies, 1977, 2).

Further, recent research has shown that respondents can readily be trained to improve their skills in the identification and differentiation of smells (Engen, 1982). The gap between perfumers, wine tasters and the general public could, it seems, be narrowed by environmental education (nosetraining).

This is one of the most hopeful results from the psychological research on smell. For to retain a rich, placeful world, individuals must come to appreciate the sensuous complexity of their environments. Smells are an important, though neglected, part of our perceived sensescape. Life in future blandscapes will be severely impoverished if negative smells are annihilated and little effort made to promote pleasant environmental odours. The smellscape is an emotive environment, not an intellectual one, and as such, should be cherished. Asked what they missed during their record-making 211 days in space in 1982, Soviet cosmonauts replied: 'the smell of flowers, the city noises, city smells . . .' (Berezovoy, 1983).

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