Constraints on Layout in Multimodal Document Generation

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Overview

Background to the Project

Levels of Representation for Generation

Rhetorical Structure in Document Generation

Rhetoric Meets Practicality

Conclusions and Further Research
Background to the Project

GeM: Genre and Multimodality

Genre model of illustrated document types

Close work with designers and layout professionals

Practical constraints on design tasks

Aimed at multimodal NLG
## Levels of Representation

<table>
<thead>
<tr>
<th>Structure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content Structure</td>
<td>the structure of the information to be communicated</td>
</tr>
<tr>
<td>Rhetorical Structure</td>
<td>the rhetorical relationships between content elements, the ‘argument’</td>
</tr>
<tr>
<td>Navigation Structure</td>
<td>the ways in which the intended mode(s) of consumption of the document is/are supported</td>
</tr>
<tr>
<td>Layout Structure</td>
<td>the nature, appearance and position of elements on the page</td>
</tr>
</tbody>
</table>
Genre is constituted in...

The necessity to satisfy goals at these levels, and to address constraints:

- **Canvas constraints**: arising out of the physical nature of the object
- **Production constraints**: arising out of the production technology
- **Consumption constraints**: arising out of the way in which the object is mediated/consumed
Rhetorical Structure in Document Generation

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Blair puts NHS crusade at heart of election fight

Challenge for health service to reform

£10m top of the range sale

Clan chief puts Black Cuillins on the market

Wiseman bids to be even bigger cheese

If you think times are hard try sleeping on the pavement

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The London Book Fair is doing a roaring trade, discovers Alexander Linklater, and our reviewers peruse the latest releases.

Wiseman started life in 1947 as a family farm which distributed gate's milk business with shares. But Dairy Crest's share price has declined steadily since the deal was announced on February 18, lowering the value of its proposed deal to just over £200m.

The biggest problem facing Wiseman is that Unigate has already agreed to sell its milk business to its rival Dairy Crest. However, the Scottish company is offering more money and is prepared to pay cash.

Wiseman approached Unigate yesterday revealed an ambitious plan to buy the milk, butter and cheese business of food giant Unigate for £225m.

Last week, and advisers said it is expected to make a firm offer within days.

The Scottish company, whose shares were battered by a profits warning in December, has tentatively proposed to pay £125m in cash and take on £100m of debt.

Wiseman's move comes just days after Unigate announced it was in talks with Dairy Crest to sell its milk business. Dairy Crest has agreed to pay £150m for the business, but Wiseman is ready to offer £225m.

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£10m top of the range sale

Clan chief puts Black Cuillins on the market

ONE of Scotland’s most famous mountain ranges has been offered for sale at more than £10m by a clan chief.

The aim is to raise funds to repair an 800-year-old castle which is the seat of a ruling clan.

Skye’s Black Cuillins, one of the country’s most spectacular landscapes and an area of major international importance, has been put up for sale by the 9th Chief of the Clan MacLeod, John MacLeod of MacLeod.

The decision to sell is to raise the necessary funds to repair the castle, which has been in his family for 200 years. He said: “The idea of selling the Cuillins is ridiculous but at such a price it’s obscene. MacLeod should hang his head in shame for trying to exploit what God has given the people of Skye. It goes to show that one thing worse than a shrinking foreland is a greedy Scottish man.”

He also said: “I demonstrated the need to get land reform through Parliament at top speed to stop the exclusivity of land ownership. The desire to keep the Cuillins out of the public domain is the very danger I warned us about.”

Potential partners could include the council, Highlands and Islands Enterprise, Scottish Natural Heritage and the National Trust for Scotland.

Councillor Michael Fidsay, chairman of the local environment select committee, said: “We will be seeking a meeting in the very near future to set the ball rolling.”

The 84-year-old owner of Easronach Castle said the move is to sell the 35 square miles of rugged landscape was principally economic. Mr MacLeod said the mountain range is “part of my soul”. He vowed the Cuillins, since a temporary refuge for Bonnie Prince Charlie and now a paradise for geologists, batologists and mountaineers.

Raymond Duncan
Skye's £10m top of the range sale

Continued from Page 1

He said: "The continued freedom of access for all to these spectacular hills must remain an integral part of the process. I would not accept an offer of £1m from someone who wanted to put a fence round it."

The clan chief said he considered the protection of existing jobs and the creation of 120 new ones to be "more important than acres".

Money raised would be reinvested in Skye with the castle's fabric repaired and new conservation and tourism projects planned.

"This castle was built to keep people out and now we want to get people in," said the landowner, who said such was the roof's condition guests had been known "to sleep with an umbrella up."

The clan chief inherited Dunvegan in 1965, building it into a tourist attraction. It attracts 45,000 visitors annually.

He anticipates interest from clan members abroad and will consider interest from foreign owners prepared to abide by sale conditions.

International property consultants FPD Scotia, which fixed the asking price on the recent sale of Snowdonia to the National Trust, and other benefactors are confident of creating serious interest.

John Lambert, chief executive of MacLeod Estates, was adamant that unless the asking price was reached urgent projects such as Dunvegan's re-roofing and a planned hotel and leisure complex would not go ahead.

He viewed it as a "win-win" situation for the island if the Cullins were looked after and at the same time capital was released for developments.

"I wouldn't want to turn it into a Disneyland attraction but we have not been able to provide the facilities for those already going there."

Nigel Hawkins, director of the John Muir Trust that bought Cullins land in 1974 from rock singer Ian Anderson of Jethro Tull, said the asking price was high.

He said: "The trust is not in the business of paying over the odds."

"A piece of Scottish history has been sold to the Americans. Castle Grant at Grantown on Spey, the seat of the Clan Grant since the 14th century, has been sold to a US-based group which invests in holiday rental property in Europe and America. It faces a new lease of life as a holiday destination for US tourists."

The castle, on the outskirts of the small Morayshire town, was sold by Mr Graham Kierle and his wife, Nanleen. They bought it in 1994, and carried out substantial restoration work before putting it on the market last August for just under £400,000.

The spectacular Dunvegan Castle; the clan centre has triggered the proposed sale of the Black Cullins because of the need for repair. The preserved interiors (below) have proved a great tourist attraction

Pictures: PETER JOLLY and JOHN F...
Offer of sale of Black Cuillins

repair of castle that is clan seat

purpose

background

elaboration

Cuillins history, geology, name

Cuillins is an important area

concession

decision to sell very difficult

MP criticises sale

decision economic

partnership to buy

Cuillins includes coasts, rivers, etc.

money to be reinvested in castle

price is high

many visitors

sellers confident (no Disney land)

good deal for Skye

elaboration

elaboration

elaboration

elaboration

elaboration
Clan chief puts Black Cuillins on the market

RAYMOND DUNCAN

One of Scotland's most famous mountain ranges has been offered for sale at more than £1m by a clan chief.

The aim is to raise funds to repair an 800-year-old castle which is the seat of a leading clan.

Skye's Black Cuillins, one of the country's most spectacular landscapes and an area of major international importance, has been put on the market by the 29th Chief of the Clan MacLeod.

John MacLeod of Sleat and successor described the

The inside story of Scotland's first democratic parliamentary election
Figure 4. Terminal layout elements of the Guardian Front page, April 11th, 2000.
Figure 5. Linking material concerning Zimbabwe on *Guardian* front page
Zimbabwe on the brink

Zimbabwe’s whites lift their heads above the parapet: ‘Some of our guys want to kill…’

Key:
4.1 Page caption
4.2 Photo of ‘poor blacks’
4.3 Caption: ‘Dozens of white-owned farms in Zimbabwe have been occupied by poor blacks claiming the land as their own, with the support of Robert Mugabe’s government, as the country’s political crisis deepens’
4.4 Photograph: Marion Herud
4.5 Headline
4.6 By-line: ‘Chris McGreal in Wedza, Zimbabwe’
4.7 Map of Zimbabwe in context of bordering countries, inset of position of Harare
4.8 Quotation: ‘I am not a party political person but things are so bad I had to get involved. If democracy does not return, the economy of this country will collapse’. ’Monty’ Montgomery, white ex-policeman
4.9 Crosshead: ‘Gunpoint’
4.10 Text of article
4.11 ‘Links: [http://www.mdc.co.zw](http://www.mdc.co.zw) Movement for Democratic Change’
4.12 Advert for charity
4.13 Crosshead: ‘Conspiracy’
4.14 Photo caption: ‘Morgan Tsvangirai, head of the opposition MDC: white support is crucial to his attempt to topple Robert Mugabe’
4.15 Inset photo of Morgan Tsvangirai

Figure 6. Guardian printed edition, page 3 coverage of events in Zimbabwe
**Figure 7:** Rhetorical Structure Analysis: Zimbabwe material, *The Guardian*, 11 April 2000
Figure 8. Layout structure for page 3 of *Guardian*
Zimbabwe's whites lift their heads above the parapet: 'Some of our guys want to kill ...'

'I am not a party political person but things are so bad I had to get involved. If democracy does not return, the economy of this country will collapse' Monty Montgomery, white ex-policeman

Chris McGrath in Wedza, Zimbabwe Tuesday April 11, 2000

Comrade Edward Musuakwa's note was to the point. "The hour has come to take what is rightfully ours. You have clearly shown us that you have ill feelings against the land issue. If you continue doing that we will bring five lornies of war vets tomorrow or any day. You are not the only farmer who has his farm taken. For your information we have taken Van Tonder's today and he was very cooperative," he wrote.

The note named a white Zimbabwean farmer, Richard Bedford, to stop resisting the occupation of his sprawling tobacco farm by hundreds of poor blacks who now claim the land as their own. Their leader, Comrade Musuakwa, arranged for a few dozen men to pound out revolutionary songs while demonstrating what their machetes could do to a tree. Richard Bedford gave in.

Gunpoint

At a neighbouring farm, Derek Hinde has spent three weeks answering distress calls on the radio. When they come - some panic-stricken at the mob at the gates, some resioned - he cannot help
GANNETS: Sulidae

NORTHERN GANNET Morus bassanus

Du – Jan van Gent  Fr – Fou de Bassan
Ge – Basstöpel     Sw – Havssula

Identification: 36" (91cm). Majestic, goose-sized, cigar-shaped sea-bird, with long pointed bill, long narrow wings and pointed tail; twice as large as Herring Gull. Adult white, with greyish bill, yellow hood and black outer wings. Juvenile dusky-brown, closely speckled white; immature increasingly invaded by white over 4-5 years. Flight alternates deep flaps with long glides, with birds passing in characteristic lines astern; when fishing, soars and wheels, then plunges head-long after fish, sometimes from 30m, or more and with wings retracted.

Confusion species: Full adult unmistakable; similarly aged Cape Gannet M. capensis, reported from Iberia, differs in black secondaries and tail and longer black gular stripe. Immature may suggest frigatebird, booby, albatross and other large tubenoses, constituting serious pitfall for unwary observer.

Voice: Barking arrah, growls and gobbling notes.


CORMORANTS: Phalacrocoracidae

Medium-sized to very large birds, mound-nesting in marshes, trees and rocky cliffs, spending winter on open waters or coastal seas. Swim and dive expertly, submerging in alarm like divers but presenting hooked bills and bare lower faces and sinuous necks. Perch freely, often with wings held open. Outline, action and formation in flight – at or well above sea surface, even higher over land – recall those of geese but beats of broad-ended wings shallower, while kinked necks held above body line. Seasonal change in adult marks and sheen; immatures lack sheen and may be pale below. Voices guttural.

CORMORANT Phalacrocorax carbo

Du – Aalscholver  Fr – Grand cormoran
Ge – Kormoran     Sw – Storskarv

Identification: 36" (91cm). Goose-sized reptilian water-bird, with long, deep, hooked bill and long head with steep nape held slightly raised in most postures. Plumage bronze-black, contrasting with yellow bill and gape and white chin and cheeks; when breeding, also shows round white thigh patch and, in most European and some British birds, whistl head-ruff and neck. Juvenile dull olive-brown above, dirty white below. Swims low in water like diver but thick neck more erect or kinked. Flight powerful, goose-like but with shallower, jerker wing-beats; neck extended slightly above body line; flies in lines or V formations, often at some height. Perches upright, often with wings held out. Sociable.

Voice: Low guttural r-rah.
Plate 5

MISCELLANEOUS LARGE LAKE AND SEA BIRDS

WHITE PELICAN
Very large with huge wingspan. Huge, flat, pouch on bill. Extensive black on primaries and secondaries of under-wing are diagnostic. Feet reddish. Flies in lines, often at a great height.

DALMATIAN PELICAN
Very large. Separated from White Pelican by ‘dirtier’ white plumage and by lack of extensive black on under-wing. Feet blackish.

BLACK-BROWED ALBATROSS
Wing span 7 ft. (2 m.). Confused with immature Northern Gannet and black-backed gulls but general character like h‘uguefulmar. Note striking black-white-black under-wing pattern and dark tail. Effortless flight, recalling Fulmar and Cory’s Shearwater.

NORTHERN GANNET
Plunges after fish.
Adult: White; pointed tail; golden nape; bold black primaries.
Immature: Dark brown with a pointed tail.
Changing immature: Increasingly white, patched with dark.
9 Fulmar
Partial migrant. Vagrant
Finland, C and S Europe.
Pl. 3: p.35

10 Cory's Shearwater
Nests south of red line.
Scarse autumn visitor to At-
lantic coasts. Vagrant C
Europe. Pl. 3: p.36

11 Manx Shearwater
Partial migrant. Red line
encloses colonies. Ranges
widely at sea. Vagrant
island. Pl. 3: p.37

12 Mediterranean
Shearwater
Partial migrant. Nests south
of red line. Has bred Bulgaria.
In autumn North Sea north to
Scotland, Scandinavia; also
Black Sea. Pl. 3: p.37

13 Storm Petrel
Partial migrant. Lines
enclose nesting areas. May
breed in N Norway. Vagrant
island. Pl. 3: p.39

14 Leach's Petrel
Red line encloses main colo-
nies. Has bred Ireland. Va-
grant island including S
Europe. Pl. 3: p.39

15 Northern Gannet
Partial migrant. Red line
encloses main colonies.
Vagrant Baltic, C Europe, E
Mediterranean. Pl. 5: p.40

16 Cormorant
Partial migrant. Has bred
Austria, Italy, Estonia. Pas-
sage C Europe. Pl. 4: p.40
Summary

Practical constraints can subvert ideal rhetorical realisation: structure is not inherent in content

Navigation must be added to manage the result

Practical constraints differ between genres

Medium and production constraints will therefore help determine differences in realisations of RST structure across genres