

APPENDIX 1: TECHNICAL DRAWINGS

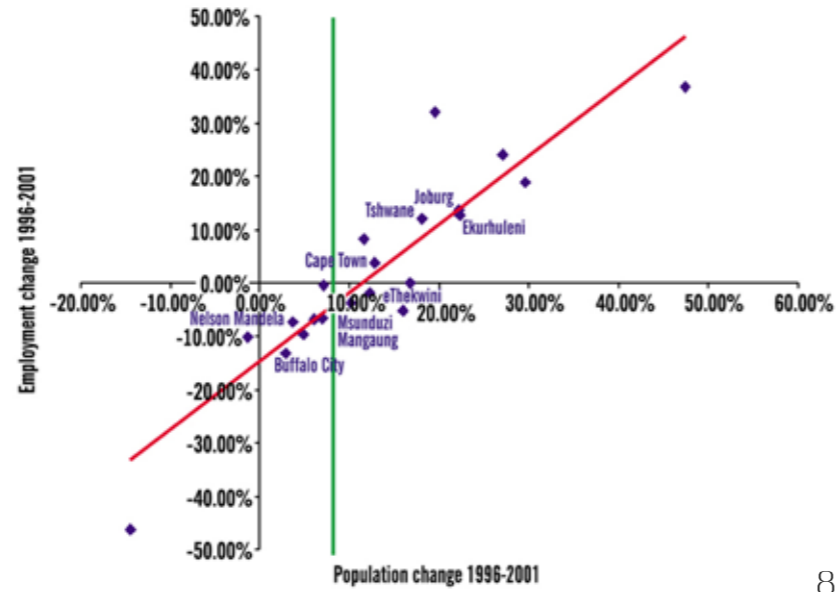
APPENDIX 2: CONTEXTUAL DATA

SOCIAL DEMOGRAPHICS

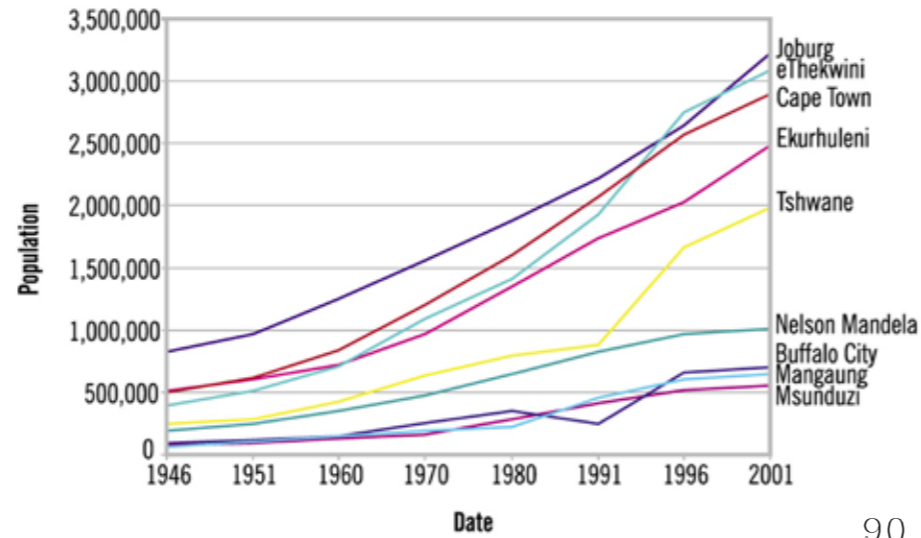
SOCIAL DEMOGRAPHICS

Social demographic studies

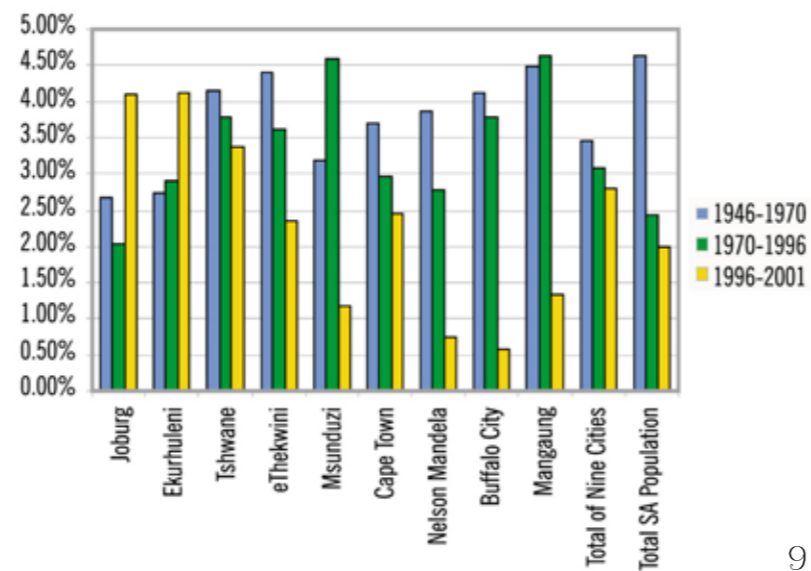
These support the perception that there are students in the 'student' world. People from different age groups are situated outside in the 'real' world.



89



90



91

UNIVERSITY OF PRETORIA
NUMBER OF STUDENTS AS ON THE FIRST TUESDAY OF JUNE 2007 (Cancellations deducted)*

FACULTY	UNDERGRADUATES									POST GRADUATES			TOTAL			% Increase/Decrease wrt 2006
	FIRST TIME ENTRANTS			OTHER			TOTAL			MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	
	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL							
FULL-TIME																
01 HUMANITIES	462	817	1279	847	1824	2671	1300	2641	3950	378	776	1154	1687	3417	5104	5.96%
02 NATURAL AND AGRICULTURAL SCIENCES	527	615	1142	1136	1459	2595	1963	2074	3737	693	676	1369	2356	2750	5106	0.37%
04 LAW	124	208	332	571	866	1437	696	1074	1769	30	29	59	725	1103	1828	-1.19%
05 THEOLOGY	39	20	59	124	61	185	163	81	244	319	73	392	482	154	636	3.75%
07 ECONOMIC AND MANAGEMENT SCIENCES	810	1045	1855	2390	2726	5116	3200	3771	6971	876	873	1749	4076	4644	8720	-0.63%
08 VETERINARY SCIENCE	8	28	36	180	338	498	168	366	534	61	62	123	229	428	657	4.95%
09 EDUCATION	225	455	680	431	1272	1703	656	1727	2383	162	340	502	818	2067	2885	18.09%
10 HEALTH SCIENCES	88	251	339	644	1632	2276	732	1883	2615	259	260	519	991	2143	3134	0.64%
12 ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY	924	347	1271	2983	1108	4091	3907	1456	5362	739	274	1013	4646	1729	6375	0.77%
TOTAL	3207	3786	6993	9286	11286	20572	12493	15672	27565	3517	3363	6880	16010	18435	34445	2.36%
PART-TIME																
01 HUMANITIES	0	0	0	1	1	2	1	1	2	58	120	178	59	121	180	-32.33%
02 NATURAL AND AGRICULTURAL SCIENCES	0	0	0	3	12	15	3	12	15	54	54	108	57	60	123	-30.90%
04 LAW	0	0	0	0	1	1	0	1	1	112	94	206	112	95	207	-18.50%
05 THEOLOGY	0	0	0	0	0	0	0	0	0	65	7	72	65	7	72	-30.77%
07 ECONOMIC AND MANAGEMENT SCIENCES	0	0	0	2	0	2	2	0	2	194	102	296	196	102	298	+16.29%
08 VETERINARY SCIENCE	0	0	0	0	1	1	0	1	1	49	60	109	49	61	110	44.74%
09 EDUCATION	0	0	0	1	5	6	1	5	6	130	235	365	131	240	371	-50.86%
10 HEALTH SCIENCES	21	57	78	35	577	612	56	634	690	268	340	608	324	974	1298	1.80%
12 ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY	0	0	0	0	0	0	0	0	0	1146	383	1531	1146	383	1531	3.87%
TOTAL	21	57	78	42	597	639	63	654	717	2878	1385	3473	2141	2049	4190	-11.57%
GRAND TOTAL (FULL-TIME + PART-TIME)																
01 HUMANITIES	462	817	1279	848	1825	2673	1310	2642	3952	436	896	1332	1746	3538	5284	3.95%
02 NATURAL AND AGRICULTURAL SCIENCES	527	615	1142	1139	1471	2610	1966	2086	3752	747	730	1477	2413	2816	5229	-0.68%
04 LAW	124	208	332	571	867	1438	696	1075	1770	142	123	265	837	1198	2035	-3.28%
05 THEOLOGY	39	20	59	124	61	185	163	81	244	384	80	464	547	161	706	-1.26%
07 ECONOMIC AND MANAGEMENT SCIENCES	810	1045	1855	2392	2726	5118	3202	3771	6973	1070	975	2045	4272	4746	9018	-1.24%
08 VETERINARY SCIENCE	8	28	36	180	339	498	168	367	535	110	122	232	278	489	767	9.26%
09 EDUCATION	225	455	680	432	1277	1709	657	1732	2389	292	575	867	949	2307	3256	1.81%
10 HEALTH SCIENCES	109	308	417	679	2209	2888	788	2517	3305	527	600	1127	1315	3117	4432	0.98%
12 ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY	924	347	1271	2983	1108	4091	3907	1456	5362	1887	657	2544	5794	2112	7906	1.36%
TOTAL	3228	3843	7071	9328	11883	21211	12556	15726	28282	5595	4758	10353	18151	20484	38635	0.64%

*These numbers represent:
1. Net enrolment numbers, viz cancellations deducted
2. A headcount, viz should a student be enrolled for more than one course of study, the student is counted only once.

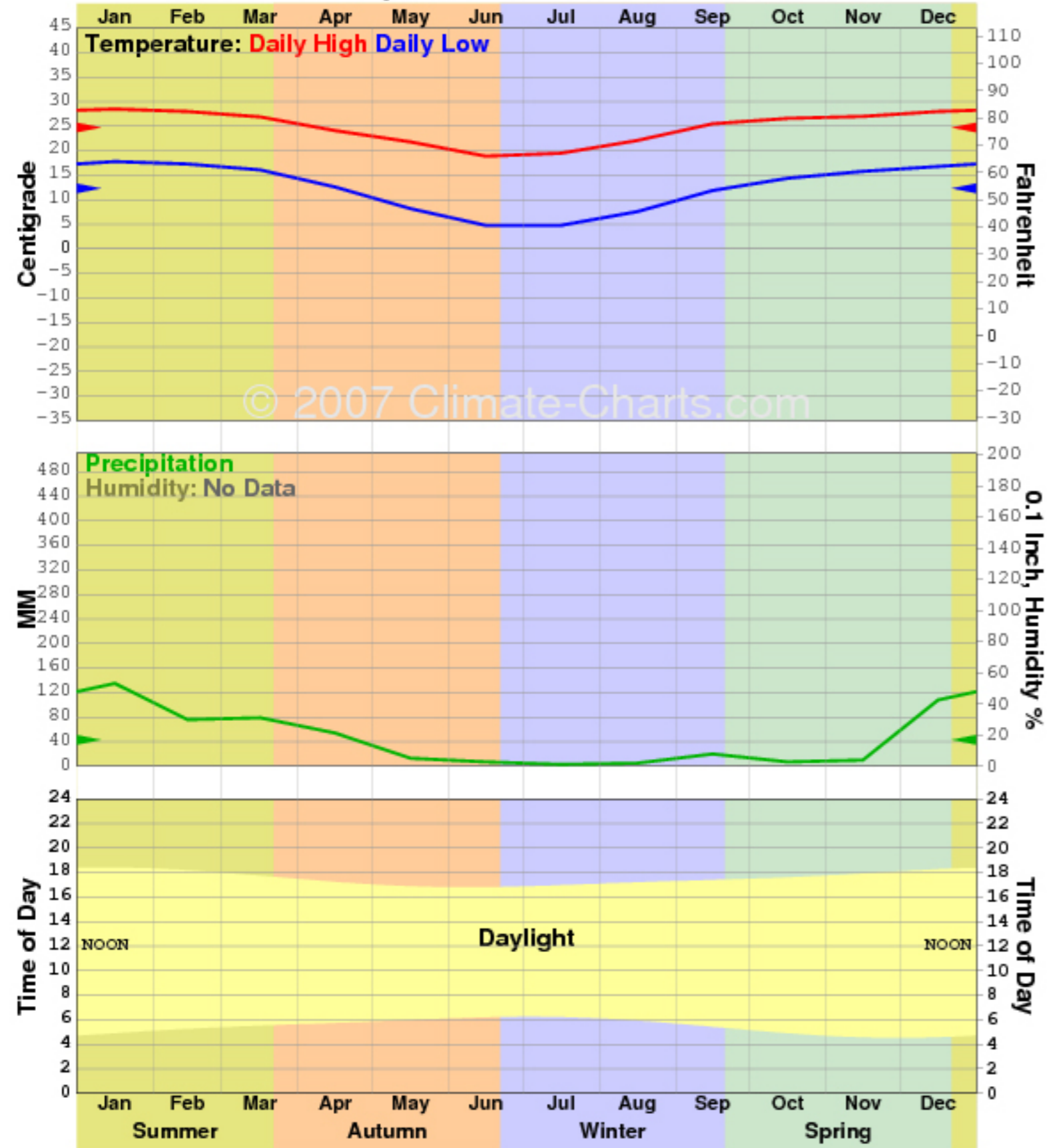
48.86% 53.02% 100.00%

% Increase/Decrease wrt 2006 0.72% -2.11% -0.84% 0.36% 0.87% 0.65% 0.45% 0.13% 0.27% 1.86% 1.45% 1.67% 0.88% 0.43% 0.64%

Student numbers

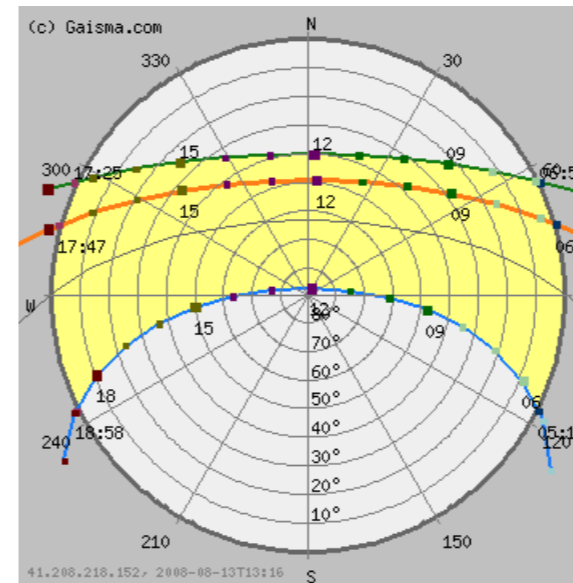
Pretoria, South Africa

Latitude: 25°44'S Longitude: 028°11'E Elevation: 1330m Station: UA68262



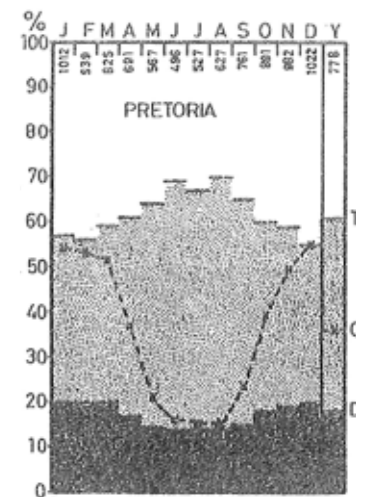
Date	Sunrise	Sunset	Length	Change	Dawn	Dusk	Length	Change
Today	06:37	17:47	11:10		06:13	18:11	11:58	
+1 day	06:36	17:48	11:12	00:02 longer	06:12	18:11	11:59	00:01 longer
+1 week	06:31	17:50	11:19	00:09 longer	06:07	18:14	12:07	00:09 longer
+2 weeks	06:24	17:53	11:29	00:19 longer	06:01	18:16	12:15	00:17 longer
+1 month	06:08	17:59	11:51	00:41 longer	05:45	18:22	12:37	00:39 longer
+2 months	05:35	18:12	12:37	01:27 longer	05:12	18:35	13:23	01:25 longer
+3 months	05:12	18:30	13:18	02:08 longer	04:48	18:55	14:07	02:09 longer
+6 months	05:50	18:52	13:02	01:52 longer	05:26	19:16	13:50	01:52 longer

SOLAR ENERGY AND SURFACE METEOROLOGY

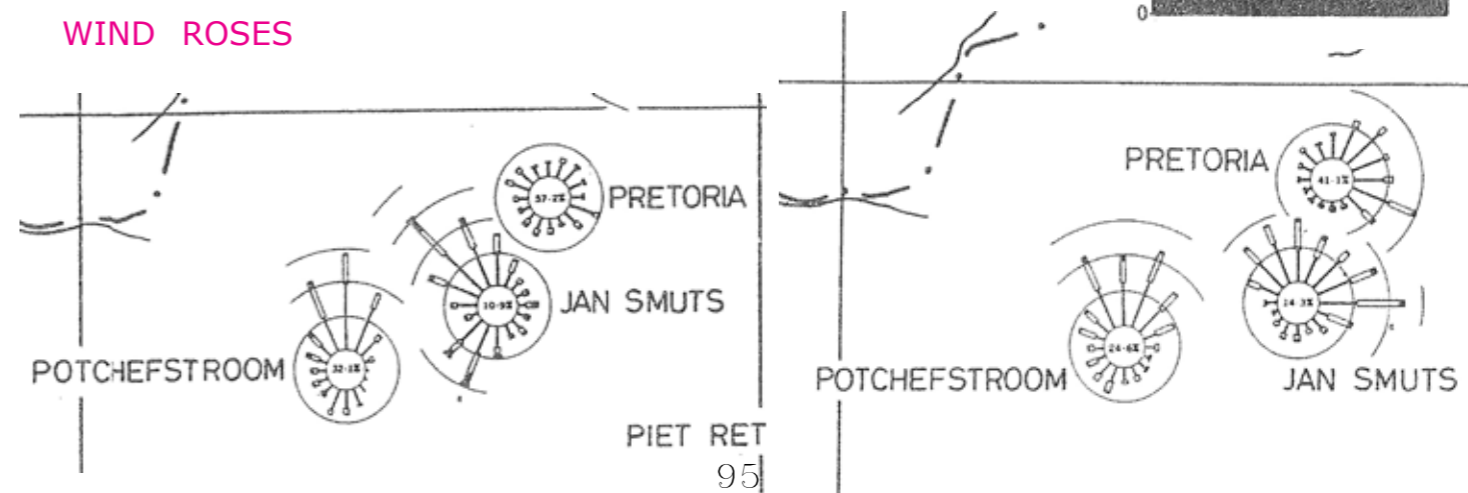


Variable	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Insolation, kWh/m ² /day	6.70	6.10	5.46	4.77	4.21	3.80	4.08	4.78	5.69	5.98	6.29	6.62
Clearness, 0 - 1	0.57	0.55	0.56	0.59	0.64	0.65	0.66	0.65	0.64	0.58	0.55	0.56
Temperature, °C	22.23	22.11	21.07	18.66	15.25	11.61	11.46	14.61	18.50	20.20	20.85	21.36
Wind speed, m/s	3.62	3.50	3.37	3.54	3.74	4.04	4.18	4.74	4.95	4.73	4.31	3.77
Precipitation, mm	134	75	79	56	12	8	3	6	20	75	103	114
Wet days, d	13.3	9.9	10.4	7.0	2.4	1.5	0.9	1.9	2.9	8.5	12.2	13.9

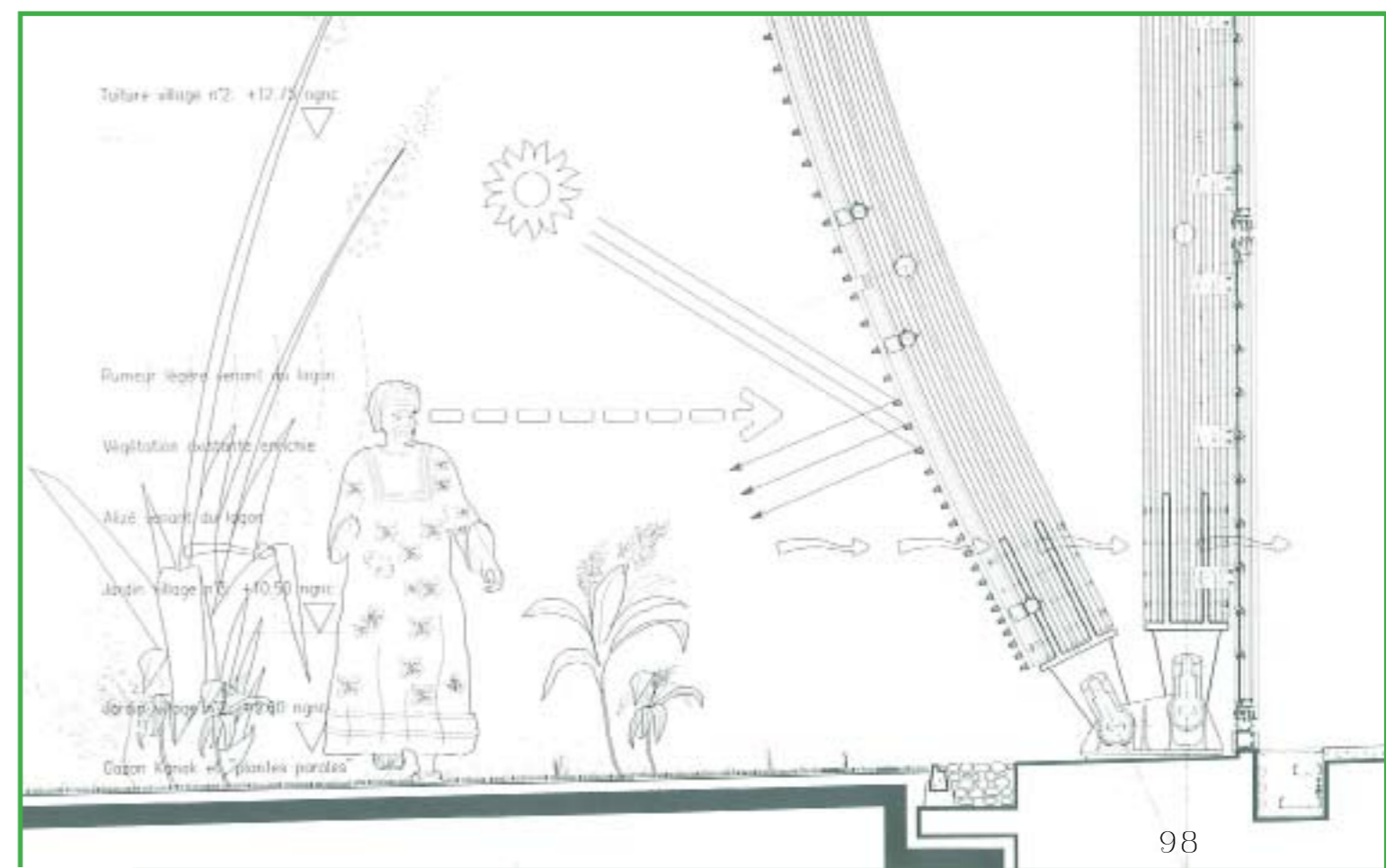
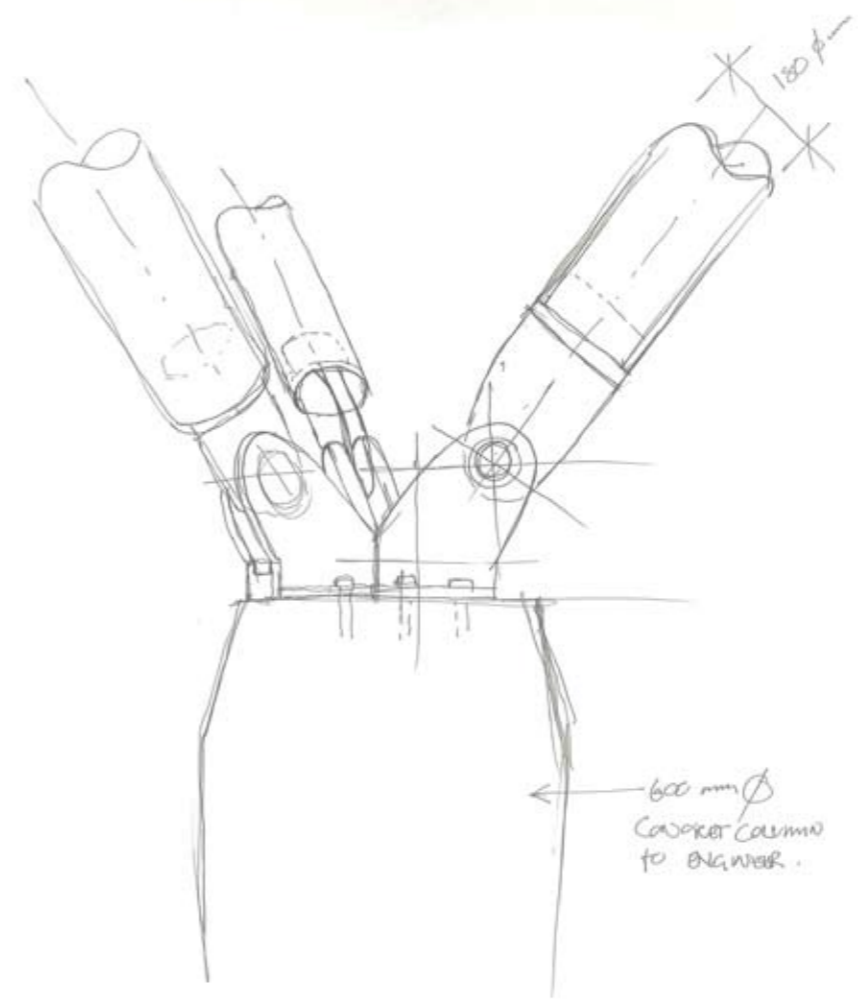
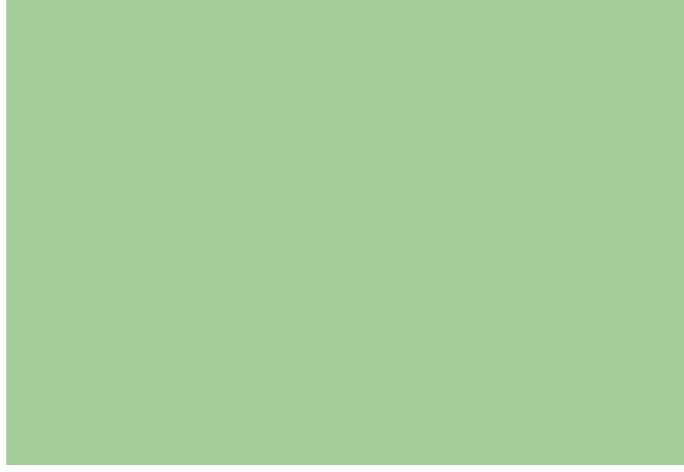
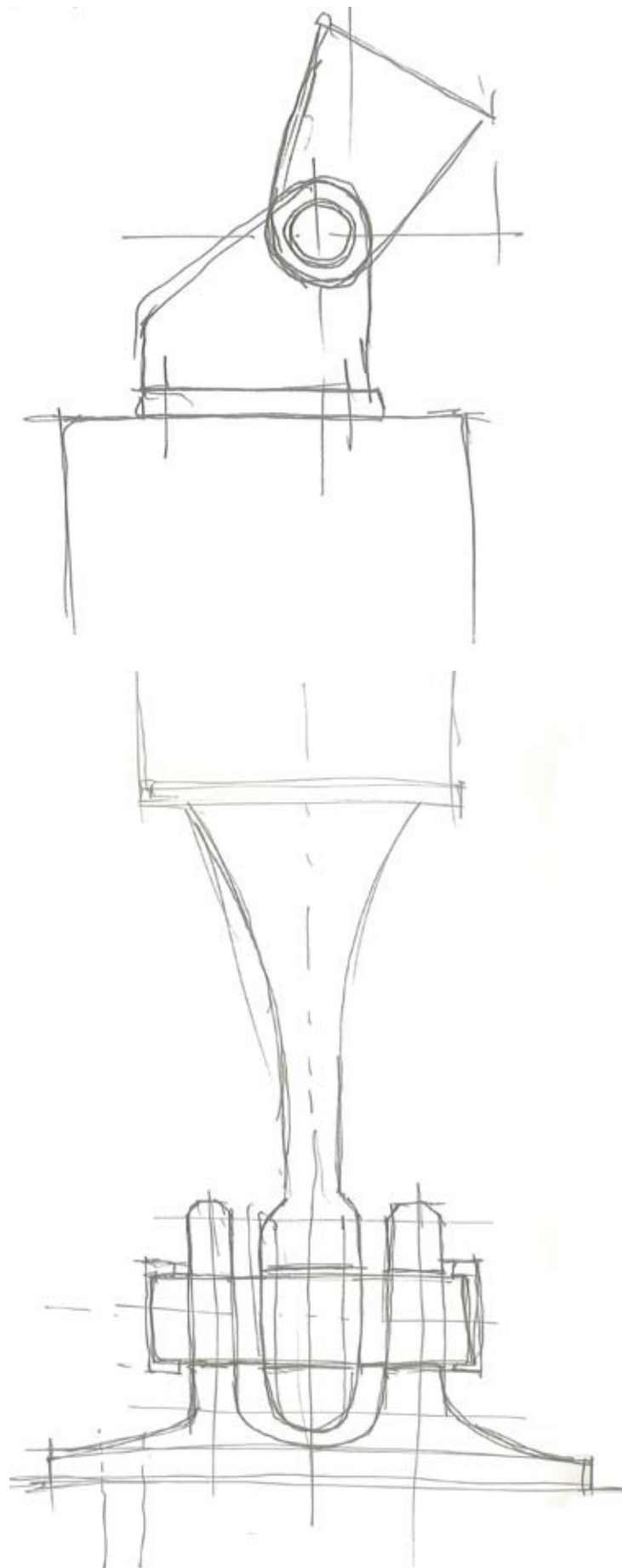
Sun path	
Today	
June 21	
December 21	
Annual variation	
Equinox (March and September)	

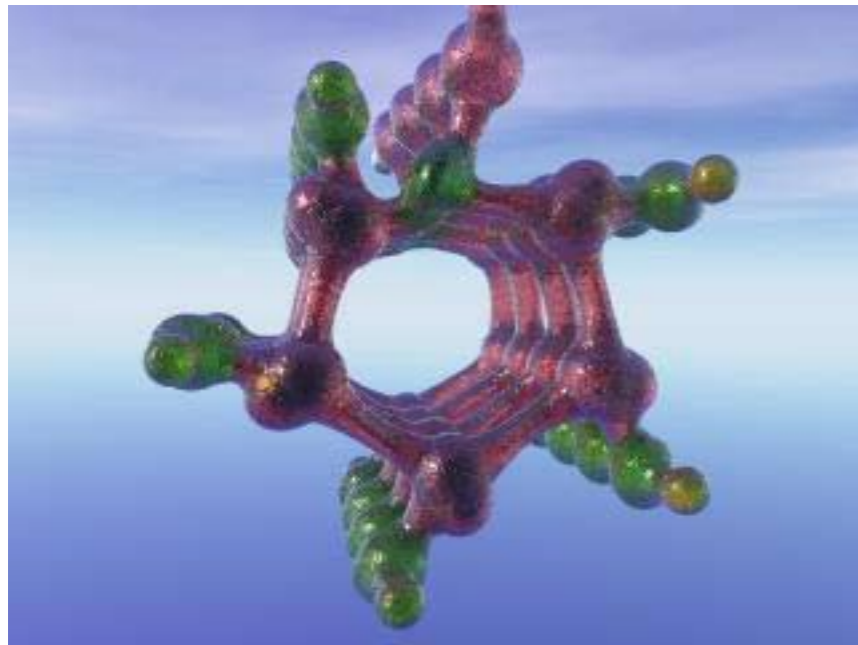


WIND ROSES



92





99

Technology was found which will materialise the concept. It is called programmable matter, a very advanced form of computer technology. Programmable matter is a very evolved form of the semiconductor.

Programmable matter is located in the meso scale, is a smaller factor than Nano.

Artificial atoms or quantum dots are very important in this technology. Artificial atoms are used in every computer today. It is a store which houses electrons. Like a kraal, it allows electrons out as needed. These artificial atoms don't have a normal atom centre and the electrons move in a 2d field around the kraal.

Programmable matter is these artificial atoms arranged in a 3d nano structure (fig. 99). Thus it would be nano scale strands. These strands would be weaved into a fabric like material or bulk material.

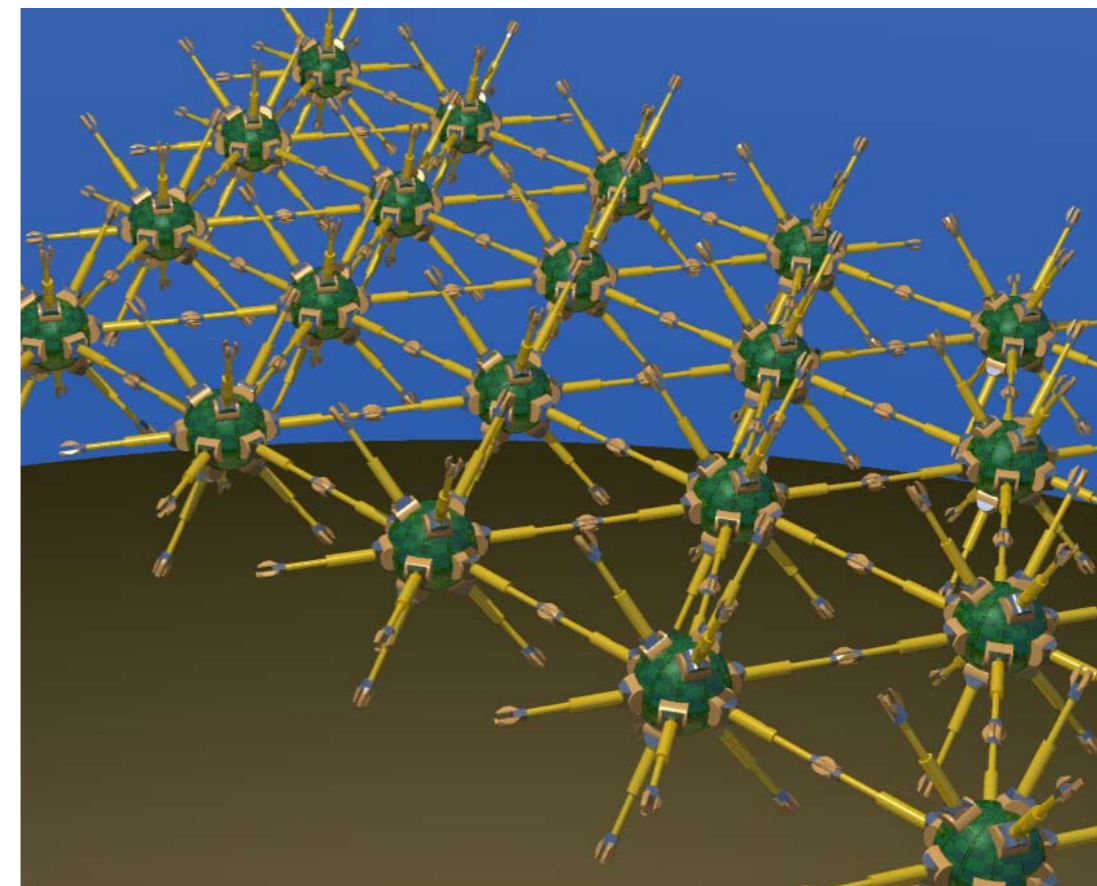
The material can then be programmed to assume the appearance of any matter.

Programmable matter look like any material imaginable and can be formed into any form with the aid of utility fog.

Therefore in the portal, it can create any world - real or fantasy. This created world would be real, essentially to the nano scale.



100

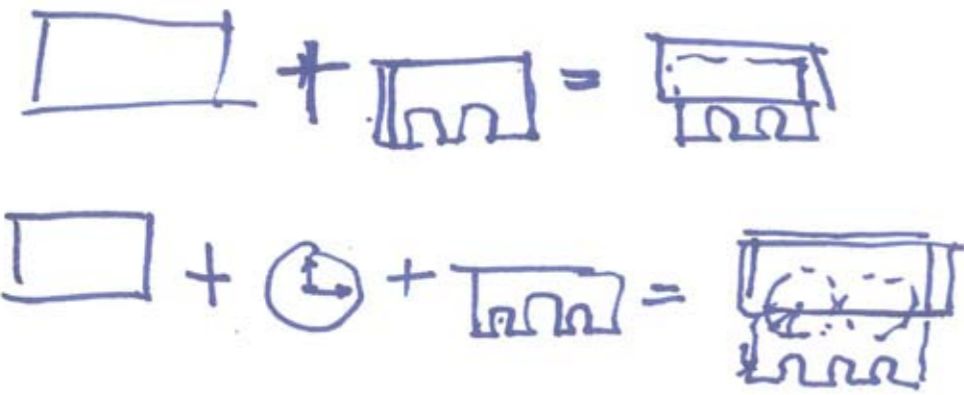


Utility fog is a nano technology where a foglet looks like (fig, 100)

These foglets have 12 arms telescoping out from the central core. Each arm has a 3 fingered claw. The foglets attach to one another at these claws.

They build up any form through a complex swarm based mathematics control system (Fig. 101).

101



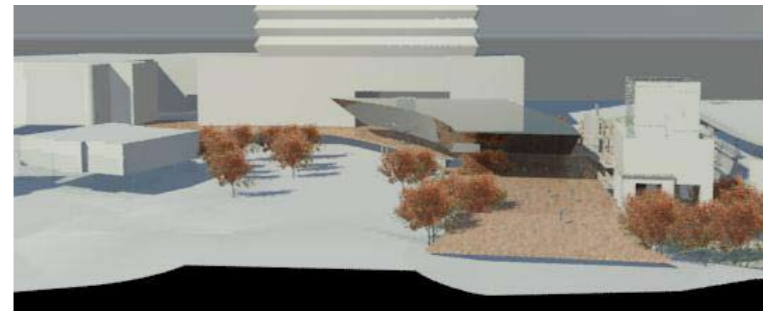
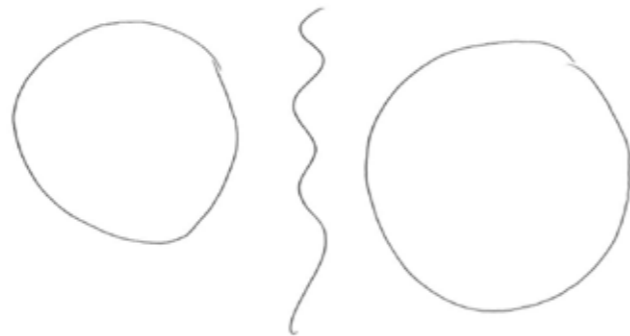
TYPOLOGIES

design

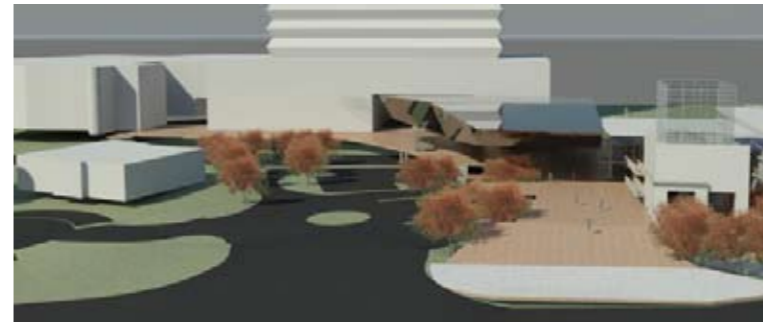
The typologies and design work from stage one were further investigated after the new context was accepted. Stage 2 investigated typologies: a building that does not physically move/change versus one that does.

theory

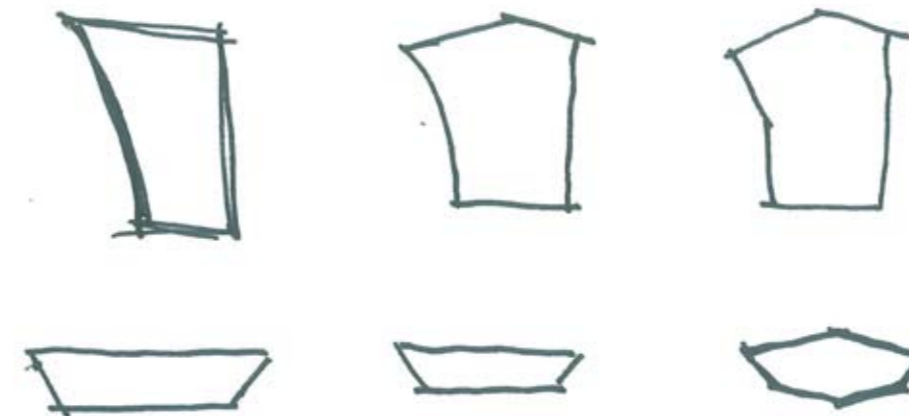
The opposition which is created by the typology is as follows: Students would be walking on the ground floor level and the inhabitable part is on the first. Thus people will have to go up to the first floor level to access the program. However, a flaw lies in the fact that they have to go up to experience the functional part of the building. Therefore the concept does not address the spatial experience.



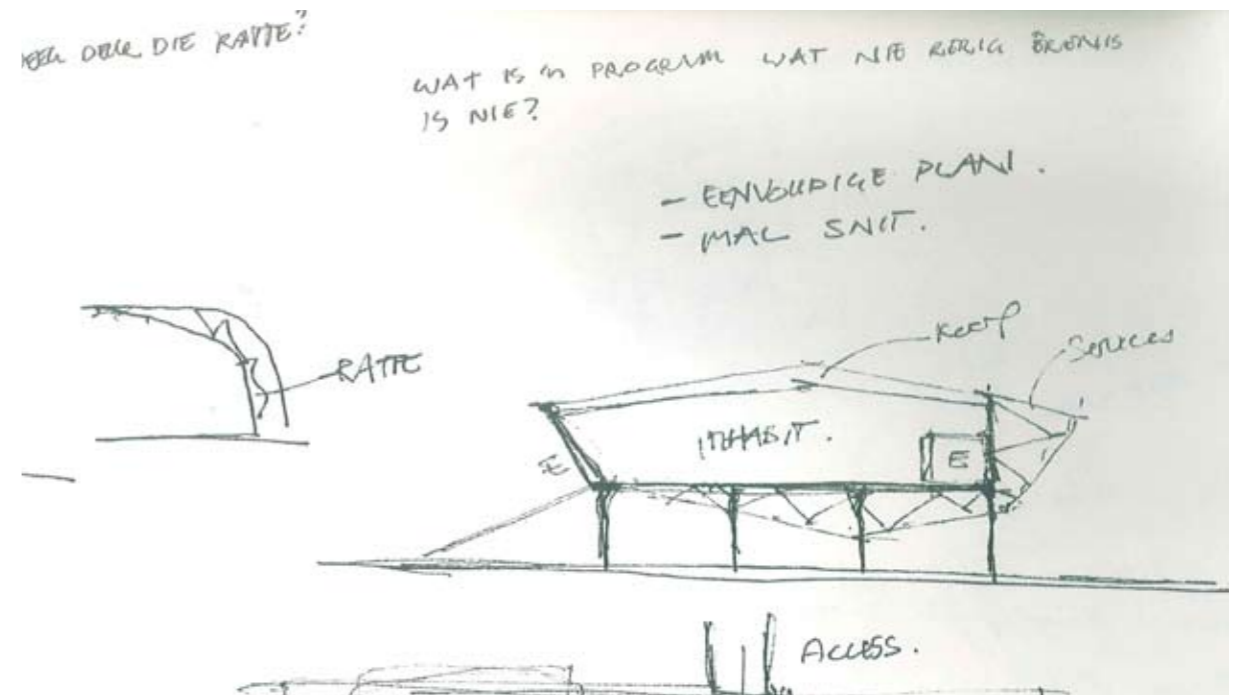
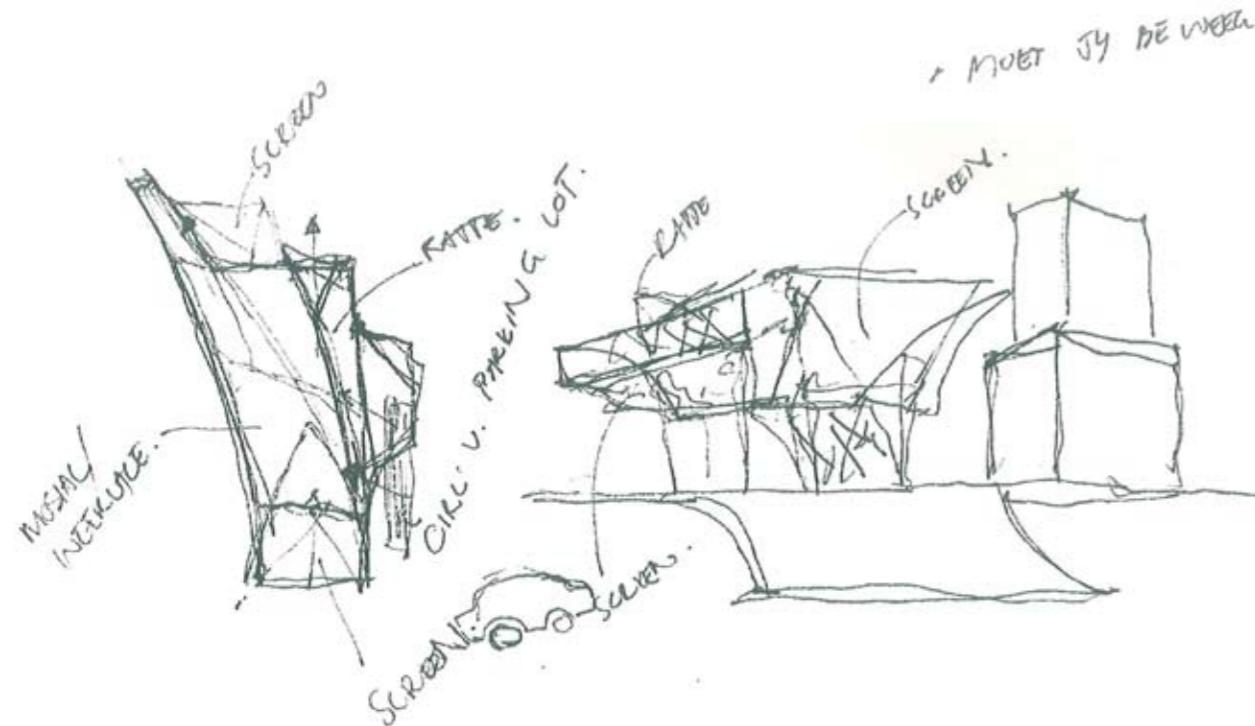
The design context may have changed, but the typologies stayed the same. Therefore the formal investigation had to take place again, responding to the new context and the rules defined by the typologies.



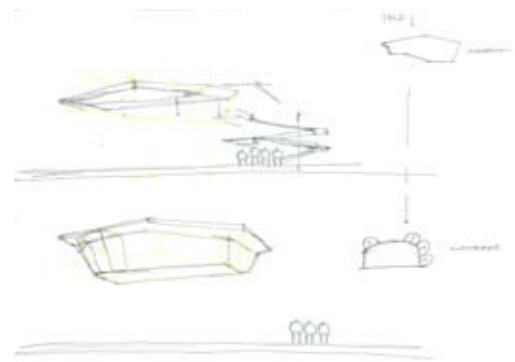
FORMS IN CONTEXT



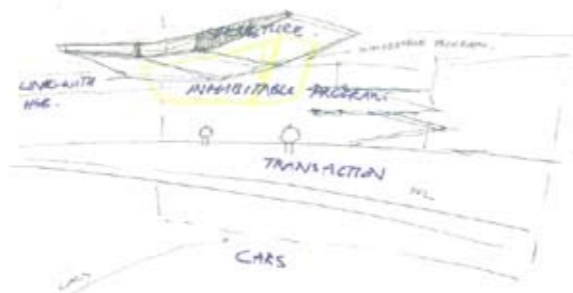
GATE HOUSE FORM EXPLORATION



MOVEMENT EXPLORATION - STRUCTURE



SUPPORTS ON EAST



POSSIBLE FORM CHANGES



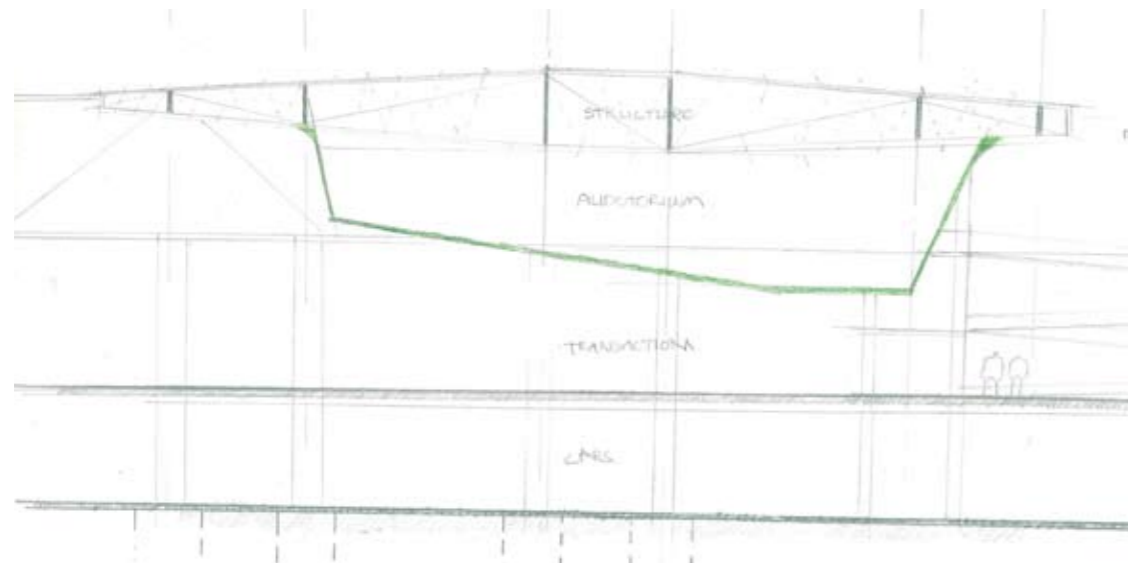
design

The shapeshifting moulds need a structure to support them. The structure will be the top layer with the shapeshifting mould literally suspended from it. A thick lattice girder structure with a formidable overhang was envisaged.

The definition of transaction space: it is a combination of transition and interaction space. It is a hyperbody term. The transaction space indicated on the drawing is the circulation from the 'real' world to student world, transacting through the threshold. Spatial experience is focused on interaction and real time feedback.



PLAN



SECTION

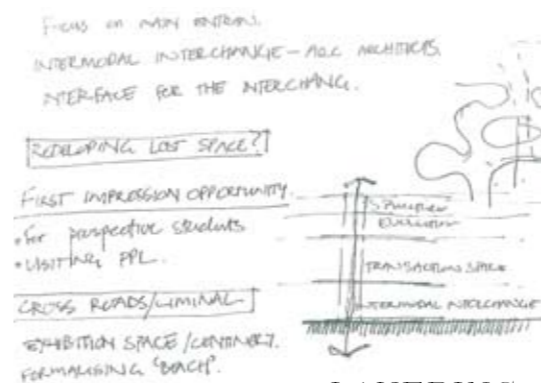
STRUCTURE

EVOLUTION

TRANSACTION

CARS

MOVEMENT EXPLORATION - TECHNOLOGY



LAYERING

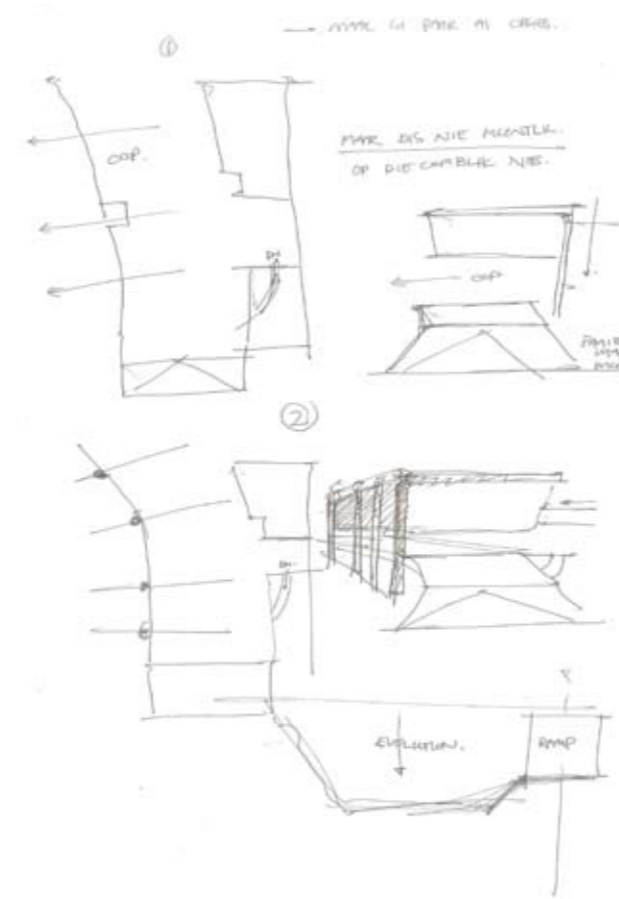


VERTICAL CIRCULATION

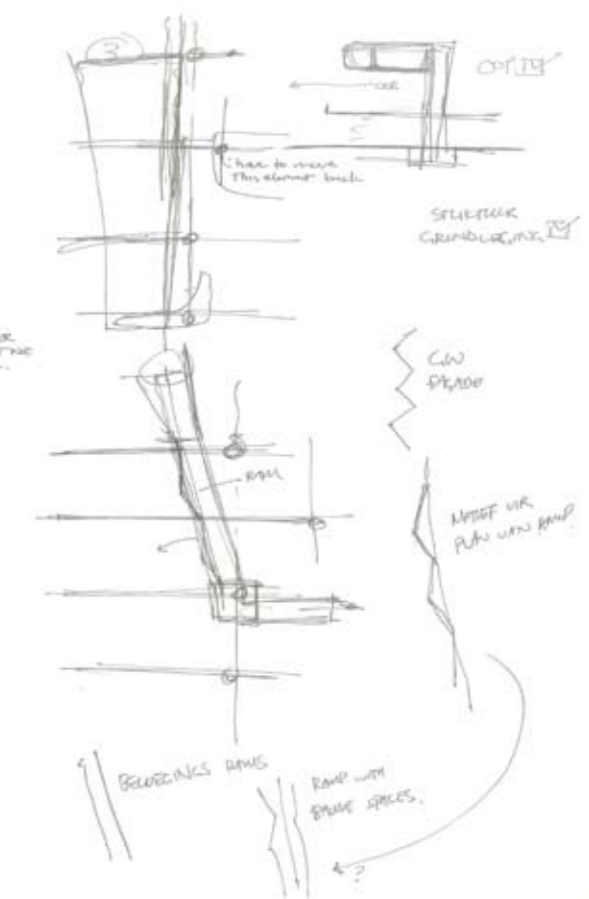
PLAN

Vertical circulation
The new parkade provides levels of circulation. The new ground level is sunk by 1,5m. This level is for vehicular traffic. The pedestrian ramp is 3m above the new ground level.

There is a need for vertical circulation, between these new levels. The vertical circulation is mostly ramp based to accommodate disabled people.



SUPPORTS ON WEST



CANTILEVER STRUCTURE