



chapter 7

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chapter 8

COMMUNITY
IS

THE SPECIFIC SYSTEM OF ACTION WHICH ARISES

(Theory of systems)

WHEN A HUMAN POPULATION.

(Demography)

SETTLED IN A GIVEN TERRITORY, ESTABLISHES

(Geography)

STRUCTURAL ARRANGEMENTS FOR ADAPTIVENESS TO IT IN ORDER TO LIVE AND SURVIVE
AS A GROUP,

(Economics)

DEVELOPING INTERACTIVE RELATIONSHIPS AMONGST ITS COMPONENTS, WHICH NOT ONLY
DEFINE AN ORDER KEPT OFF EQUILIBRIUM BY SOME KIND OF STRESS BUT ALSO

(Sociology)

ORIGINATE SHARED WAYS OF THINKING, FEELING AND ACTING WHICH ARE

(Cultural anthropology)

INTERNALIZED BY ALL THE POPULATION AND WITH WHICH EACH INDIVIDUAL IDENTIFIES
HIMSELF IN A PARTICULAR DEGREE ACCORDING TO HIS PERSONAL LIVING EXPERIENCE AND
INHERITED CHARACTERISTICS.

(Psychology)

Appendix 2: Hierarchy of needs

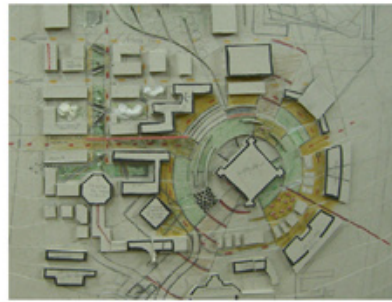

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Need Category	Description	Attributes of the urban environment associated with the satisfaction of needs (examples)
1. Physiological	Provision of food, shelter and health care.	Retailing/wholesaling systems distributing food, clothing and health supplies. Health care clinics and hospitals. Essential services (water, sewerage, power). Dwellings.
2. Safety – security	Protection from physical harm and intruders. Privacy and absence of overcrowding. Protection of property.	Fire and police protection services. Road safety. Absence of noxious environmental elements (pollutants). Residential areas that ensure privacy.
3. Affection – belonging	Harmonious relationships with other members of the community. Identification with and acceptance of groups within the community.	Facilities for community organisations (meeting places). Physical layout of neighbourhood such that cooperative and harmonious inter-family relationships are fostered. Physical identity of the neighbourhood.
4. Esteem	Status and recognition by others in the community.	Opportunities for home ownership. Prestige of neighbourhood.
5. Self actualization	Role relationship <i>vis a vis</i> others. Realization of one's potential. Creativity / self expression.	Built environment that facilitates creativity and self expression. Employment opportunities and community organisations that enable the use and development of skills.
6. Cognitive / Aesthetic	Provision of educational experience, intellectual stimulation and experiences. Aesthetically appealing events and phenomena.	Educational and cultural facilities. Recreational facilities. Aesthetically appealing built and natural environment.

Appendix 3: Models not used in the main text



Existing condition of site



Emphasise the circle



Question the question mark



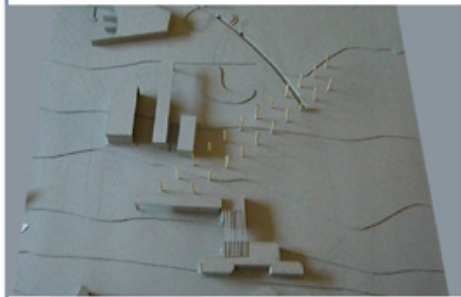
Lift the landscape, drop the library



Urban rooms and major circulation routes



Go vertical - intervene on building facades



Major axis linking entire site



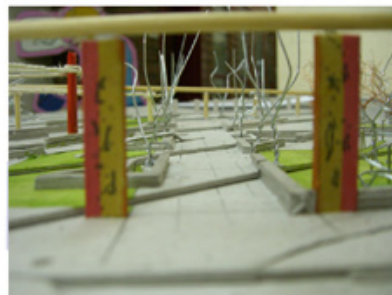
Entrances and major circulation routes



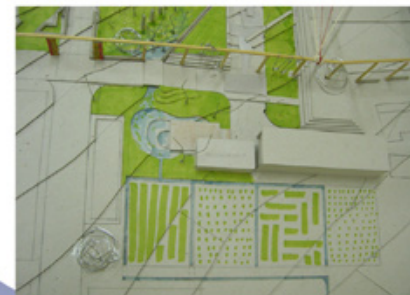
Aquaduct pulling through the centre



Linking the library



Enter under the aquaduct



Irrigation of food gardens

Appendix 4: Storm water calculations

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Hans Strydom Channel:													
Month:	Max Precip:	Min Precip:	Ave (mm):	Ave (m):	Water collection area (sqm):	Vol of water (cube m):	Area of channel (sqm):	Evap (mm/week):	Evap (m/mnth):	Evap Vol (cube m/mnth)	Vol of water - evap (cube m):	Area to irrigate (sqm):	Irrigation (mm/week):
Jan	492	17	254.5	0.2545	20000	5090	1680	35	0.14	235.2	4854.8	1386	80
Feb	199	8	103.5	0.1035	20000	2070	1680	35	0.14	235.2	1834.8	1386	80
Mar	186	17	101.5	0.1015	20000	2030	1680	35	0.14	235.2	1794.8	1386	80
Apr	166	3	84.5	0.0845	20000	1690	1680	35	0.14	235.2	1454.8	1386	80
May	63	0	31.5	0.0315	20000	630	1680	35	0.14	235.2	394.8	1386	80
Jun	84	0	42	0.042	20000	840	1680	35	0.14	235.2	604.8	1386	80
Jul	26	0	13	0.013	20000	260	1680	35	0.14	235.2	24.8	1386	80
Aug	29	0	14.5	0.0145	20000	290	1680	35	0.14	235.2	54.8	1386	80
Sep	83	0	41.5	0.0415	20000	830	1680	35	0.14	235.2	594.8	1386	80
Oct	175	12	93.5	0.0935	20000	1870	1680	35	0.14	235.2	1634.8	1386	80
Nov	253	31	142	0.142	20000	2840	1680	35	0.14	235.2	2604.8	1386	80
Dec	219	46	132.5	0.1325	20000	2650	1680	35	0.14	235.2	2414.8	1386	80
Total	1975	134	1054.5	1.0545	20000	21090	1680	35	0.14	2822.4	18267.6	1386	80

Ramabulane													
Month:	Max Precip:	Min Precip:	Ave (mm):	Ave (m):	Water collection area (sqm):	Vol of water (cube m):	Area of dams (sqm):	Evap (mm/week):	Evap (m/mnth):	Evap Vol (cube m/mnth):	Vol of water - evap (cube m):	Vol of water + E's excess (cube m):	Area to irrigate (sqm):
Jan	492	17	254.5	0.2545	220000	55990	9773	35	0.14	1368.22	54621.78	57506.06	2500
Feb	199	8	103.5	0.1035	220000	22770	9773	35	0.14	1368.22	21401.78	22172.06	2500
Mar	186	17	101.5	0.1015	220000	22330	9773	35	0.14	1368.22	20961.78	21704.06	2500
Apr	166	3	84.5	0.0845	220000	16590	9773	35	0.14	1368.22	17221.78	17726.06	2500
May	63	0	31.5	0.0315	220000	6930	9773	35	0.14	1368.22	5561.78	5561.78	2500
Jun	84	0	42	0.042	220000	9240	9773	35	0.14	1368.22	7871.78	7871.78	2500
Jul	26	0	13	0.013	220000	2860	9773	35	0.14	1368.22	1491.78	1491.78	2500
Aug	29	0	14.5	0.0145	220000	3190	9773	35	0.14	1368.22	1821.78	1821.78	2500
Sep	83	0	41.5	0.0415	220000	9130	9773	35	0.14	1368.22	7761.78	7761.78	2500
Oct	175	12	93.5	0.0935	220000	20570	9773	35	0.14	1368.22	19201.78	19832.06	2500
Nov	253	31	142	0.142	220000	31240	9773	35	0.14	1368.22	29871.78	31181.06	2500
Dec	219	46	132.5	0.1325	220000	29150	9773	35	0.14	1368.22	27781.78	28958.06	2500
Total	1975	134	1054.5	1.0545	220000	231990	9773	35	0.14	16418.64	215571.36	223588.32	2500

Grey water Calculations:													
Area of Housing (sqm)	Area of E's housing (sqm)	3 stories (sqm)	Family of 4 (sqm)	No. of families	No. of people	80l grey water/person/day	Vol grey water/day (cube m):	vol grey water/mnth (cube m):	Evap (m/mnth):	Area amelioration dam (sqm)	Evap vol (cube m/mnth):	Vol grey water/mnth - evap (cube m):	Vol grey water/year (cube m):
1440	3265	14115	60	235.3	941.0	75280.0	75.3	2258.4	0.14	752.8	105.392	2153.0	25836.096

Library Square:

Playpump pumps 1400l / hr (cube m/mnth):	Evap (m/mnth):	Area of channel + dam (sqm)	Vol of evaporation (cube m/mnth)	Vol of water - evap (cube m/mnth)	Area of library roof (sqm):	Month:	Max Precip:	Min Precip:	Ave (mm):	Ave (m):	Vol of water from roof (cube m / mnth)	Total vol of water (cube m / mnth)
168	0.14	190	26.6	141.4	4061	Jan	492	17	254.5	0.2545	1033.5245	1174.9245
168	0.14	190	26.6	141.4	4061	Feb	199	8	103.5	0.1035	420.3135	561.7135
168	0.14	190	26.6	141.4	4061	Mar	186	17	101.5	0.1015	412.1915	553.5915
168	0.14	190	26.6	141.4	4061	Apr	166	3	84.5	0.0845	343.1545	484.5545
168	0.14	190	26.6	141.4	4061	May	63	0	31.5	0.0315	127.9215	269.3215
168	0.14	190	26.6	141.4	4061	Jun	84	0	42	0.042	170.562	311.962
168	0.14	190	26.6	141.4	4061	Jul	26	0	13	0.013	52.793	194.193
168	0.14	190	26.6	141.4	4061	Aug	29	0	14.5	0.0145	58.8845	200.2845
168	0.14	190	26.6	141.4	4061	Sep	83	0	41.5	0.0415	168.5315	309.9315
168	0.14	190	26.6	141.4	4061	Oct	175	12	93.5	0.0935	379.7035	521.1035
168	0.14	190	26.6	141.4	4061	Nov	253	31	142	0.142	576.662	718.062
168	0.14	190	26.6	141.4	4061	Dec	219	46	132.5	0.1325	538.0825	679.4825
2016	0.14	190	319.2	1696.8	4061	Total	1975	134	1054.5	1.0545	4282.3245	5979.1245

Irrigation (m/month):	Irrigation_vol (cube m/mnth):	Vol of water - irrigation (cube m):	C:	Vol of water - C (cube m):
0.32	443.52	4411.28	1527	2884.28
0.32	443.52	1391.28	621	770.28
0.32	443.52	1351.28	609	742.28
0.32	443.52	1011.28	507	504.28
0.32	443.52	48.72	189	-237.72
0.32	443.52	161.28	252	-90.72
0.32	443.52	-418.72	78	-496.72
0.32	443.52	-388.72	87	-475.72
0.32	443.52	151.28	249	-97.72
0.32	443.52	1191.28	561	630.28
0.32	443.52	2161.28	852	1309.28
0.32	443.52	1971.28	795	1176.28
0.32	5322.24	12945.36	6327	6618.36

Channel:

Irrigation (mm/week):	Irrigation (m/month):	Irrigation vol (cube m / mnth):	Vol of water - irrigation (cube m):	Playpump pumps 1400l / hr (cube m/mnth):	Vol of water - playpump (cube m):	Vol of water + grey water (cube m):	C:	Vol of water - C (cube m):	Main dam vol (cube m):	Vol of water R (cube m/mnth)
80	0.32	800	56706.06	168	56538.06	58691.07	16797	41894.07	2000	39894.068
80	0.32	800	21372.06	168	21204.06	23357.07	6831	16526.07	2000	14526.068
80	0.32	800	20904.06	168	20736.06	22889.07	6699	16190.07	2000	14190.068
80	0.32	800	16926.06	168	16758.06	18911.07	5577	13334.07	2000	11334.068
80	0.32	800	4761.78	168	4593.78	6746.79	2079	4667.79	2000	2667.788
80	0.32	800	7071.78	168	6903.78	9056.79	2772	6284.79	2000	4284.788
80	0.32	800	691.78	168	523.78	2676.79	858	1818.79	2000	-181.212
80	0.32	800	1021.78	168	853.78	3006.79	957	2049.79	2000	49.788
80	0.32	800	6961.78	168	6793.78	8946.79	2739	6207.79	2000	4207.788
80	0.32	800	19032.06	168	18864.06	21017.07	6171	14846.07	2000	12846.068
80	0.32	800	30381.06	168	30213.06	32366.07	9372	22994.07	2000	20994.068
80	0.32	800	28158.06	168	27990.06	30143.07	8745	21398.07	2000	19398.068
80	0.32	9600	213988.32	2016	211972.32	237808.416	69597	168211.416	2000	144211.416