

## Collecting Light

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Figure 1: Students undertaking fieldwork for 'Collecting light': Rainy Hall, New College, The University of Edinburgh, 2009. Photograph: Alistair Blake, Sandy Murray, Nicholas Sharp

“...it would be well to explain what I mean by “an excellent light.” It is necessary because to most people a good light means only much light. If we do not see a thing well enough we simply demand more light. And very often we find that it does not help because the quantity of light is not nearly as important as its quality” (Rasmussen, 1959).

The understanding and manipulation of natural light is a critical aspect of making and experiencing architecture, and a crucial constituent of architectural design’s environmental respons[e]-ibility. Working with this is a tacit, practised knowledge of the architect, and can be a marker of the quality, durability and significance of successful architecture, whether a private dwelling, sacred space, or public building. Orientation, opening depth, framed geometries, volumetric ratios, absorption and reflectivity of materials: these can be manipulated to catch, nuance, or augment existing diurnal and seasonal sun paths and patterns; to work with and respond to the existing atmospheric conditions of a particular location, which may enhance or shape intended occupation. Designing for little, or less light, is an underrated skill. Steen Eiler Rasmussen identifies the importance of quality of light, as a means to see well, not merely to look.

More recent attention has been paid to designing with natural light (Steane, 2011)<sup>1</sup>. This resurgence of interest continues one disciplinary story of the core tasks of architecture, but also demonstrates an attentiveness to working more with natural light and less with artificial light dependent on additional resources and energy. Evaluation of the quality of light is much less explicit or rigorously examined than existing methods used in quantitative evaluation of daylight performance in building. How do we assess the quality of light where increasingly prevalent electronic glows and interfaces emanating from mobile devices, digital working technologies and external communications condition our contemporary designed environments? Expectations of 24hour full and even illumination are fulfilled by swarming cable networks of electrical supply secreted within building fabric, which serve a proliferation of lighting devices and

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Figure 2a: End of project studio installation, October 2009. Photographs: author



Figure 2b: End of project studio installation, October 2009. Photographs: author

instruments. If quality of light is so important for good architecture, how do we acknowledge the multiplicity of light conditions and sources, and navigate them well in order to gain knowledge, gather evidence, identify and order degrees and types of excellence of light? What are precise and rigorous terminologies, techniques and approaches which might be appropriated to develop practical design understanding through skilled use, to work between principles and the particular? How do we learn and teach this effectively?

'Collecting Light' was an exercise set by the author as a pedagogic outset for the Master of Architecture two year integrated studio at the University of Edinburgh<sup>2</sup>. City:Field Project 1 worked with a field of given institutional interiors in the University [Fig. 1]. An aim was to develop and attune skills in critical observation of qualities of light. Rasmussen's text on daylight and suggested categorisation was offered as an orientation: students looked for spaces 'lit from the side', 'lit from both sides', and 'lit from above' (Rasmussen, 1959). The task was to 'collect' site specific natural light through iterations of visual and spatial translation, ordering and taxonomic strategies. 'Data' was gathered through both quantitative measure and qualitative document, then discussed and re-gathered. Material findings were finally displaced into the space of the design studio through the mediation of film, model and drawing [Fig.2] in order to activate potentially productive shifts between field and studio, documentation and design. The project exposes a critical aspect of situated knowledge in architecture, where what is carried with the collected data also offers a surplus of sometimes unexpected and overlooked accretions: in this case, foregrounds of temporal use, habits of servicing, positions of disclosure and concealment.

In Architecture and Urban Design practice and education, the city is often described as a Laboratory- a place where ideas, experiments and methods can be posited, tested and evaluated. This conceptualisation of the city assumes a quasi-scientific framework which sets out prescriptive modes of subsequent operation: problem solving, quantitative evaluation, design 'results'. It positions the city as a problem, a site of intervention, a passive object of application of methods, an inert condition in need of knowledge derived from presupposed theory. Similarly inhibiting is a description and conception of the city as a Work of Art. However, to conceive of the city as an Archive establishes architecture as a discipline necessarily situated in relations between theory and practice. It assumes that knowledge is sited materially as built form, indexed through visual and textual documents, evidenced in marks and traces of use, and is both formed and discovered in working through the collection that is itself alert, responsive to attention. The quantitative-qualitative dialectic of science-art based knowledge is not enough on its own to analyse and project knowledge of and for architecture. The city, or given situation, is engaged with productively not solely through modes of hypothesis and experiment, or aesthetic knowledge and judgement. Close investigation, critical practices, speculation and techniques of material and spatial thinking drawn from the humanities and design disciplines, place emphasis on learning from what exists, in dialogue with informed and grounded

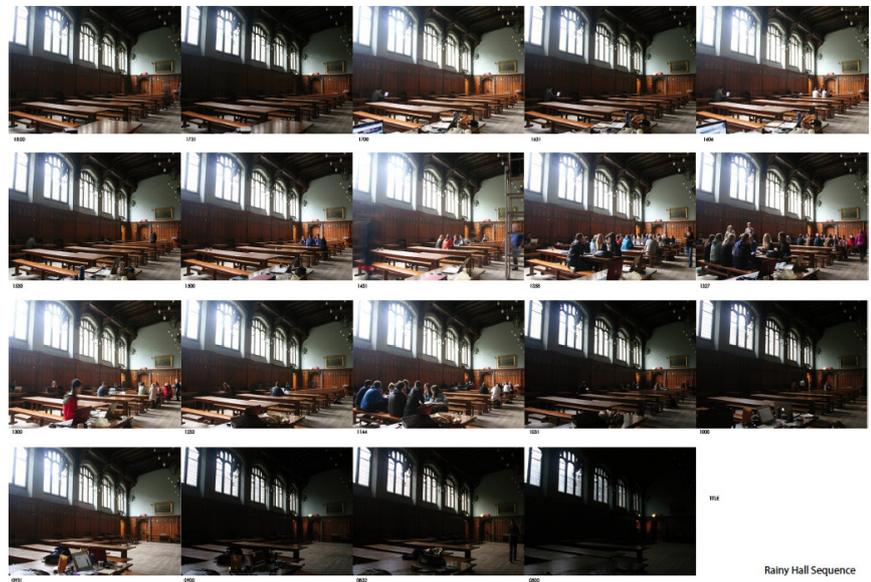
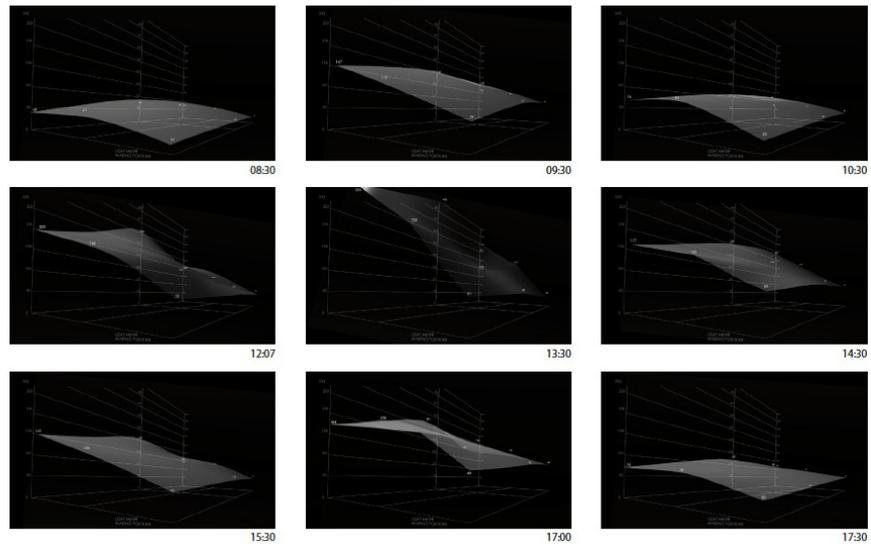
invention of working with what might exist in the future. Collection and collecting are positioned here as part of an archival-propositional design practice, where qualitative criteria can be foregrounded.

Students worked in twelve groups of four to five students. Some were new to the city, some familiar with it. This text focuses on one group, who titled their work, 'Qualitative and empirical distillation of illuminance' (Alistair Blake, Nikita Mei, Sandy Murray, Nicholas Sharp) and who, with four other groups, were given the site of William Playfair's New College [1846-50]. Following initial group scoping, they identified Rainy Hall, a north facing side-lit dining room, to work with.

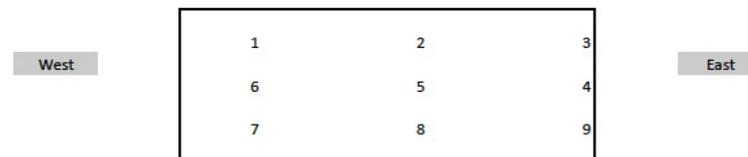
The students used two main methods to 'collect light' [Fig.3]. First, they collected quantitative data measuring illuminance. Lux meter readings were taken at equally spaced points in the room at approximately hourly intervals throughout the day, primarily with no electric light, but with three additional 'lights on' readings. Scaled plan and section drawings positioned and recorded these points. This data was then translated into graphically modelled 'data nets', which show the relative illuminance of these points in the room as an elevated spatial representation (most variation in light = more stretched form). Second, a series of time-lapse digital photographs were taken, corresponding to the measurement times, and correlated into a film-strip sequence which recorded the qualitative effect of patterns of illuminance and variations in the light over one day. Photography as a 'process reproduction' allows an additional capacity to 'capture' beyond what is perceived by the naked eye (Benjamin, 1986). These two 'collections' of light remained as autonomous data sets. The first evidencing amount and range of light; the second, graduated and sequential shifts of effect.

The project brief required a transposing of this gathered qualitative and quantitative data to the studio and to question how these methods might be tools for, or activated by, an archival-propositional design practice. Therefore, these methods were repeated in the architectural design studio, a space also in an elevated part of a building in the city centre, but lit from both sides [Fig.4]. This established a potential site and siting strategy: a north-south axis through the city, common to both spaces. In further dialogue with design tutors, the topographic condition of this axis was explored through the introduction of the concept of 'fetch', a term taken from oceanography to signify the distance a wave travels over open sea before it breaks. This term was interpreted as analogous to the horizontal open space in the environment where space and light 'breaks' when it meets the constructed skin of a building. The nature of the architectural enclosure of Rainy Hall was therefore conceived as a protective yet porous skin, affecting and filtering the nature of the wave (light) and vice versa. An additional anchoring reference was the National Observatory/ National Monument on Calton Hill, as an example of a space lit from above which occupies a similar elevated level in Edinburgh's urban topography.

Figure 3: Study 1: Rainy Hall, New College, University of Edinburgh, October 2009: Light patterns changing over an autumn day in a north facing dining room. Alistair Blake, Nikita Mei, Sandy Murray, Nicholas Sharp



Windows



Back Wall

Lights Off	1	2	3	4	5	6	7	8	9
830	47	73	60	48	66	51	18	22	19
930	167	199	156	129	152	112	49	87	79
1030	76	91	62	62	92	83	23	32	30
1210	209	289	200	124	138	166	51	71	66
1330	334	436	301	232	170	233	61	82	70
1430	177	265	286	179	166	159	68	92	79
1530	160	209	143	117	116	106	40	53	51
1700	183	295	203	179	176	155	64	91	108
1730	76	117	93	77	80	76	30	47	59

Lights On	1	2	3	4	5	6	7	8	9
830	115	141	121	86	111	87	80	98	91
1500	375	496	391	292	285	303	159	220	206
1730	188	237	185	136	174	128	91	139	120

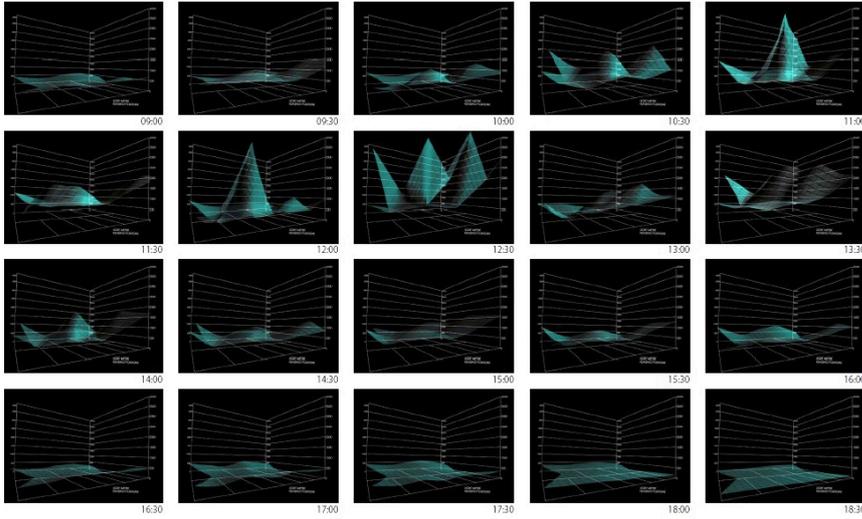
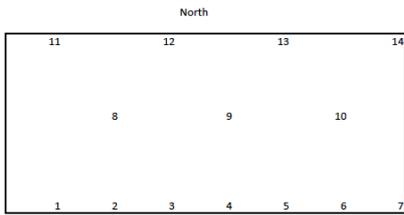


Figure 4: Study 2: Studio 5, Minto House, Chambers Street, University of Edinburgh, October 2009: Light patterns changing over an autumn day in a north and south facing architectural studio. Alistair Blake, Nikita Mei, Sandy Murray, Nicholas Sharp



Studio 5  
Data Points

The investigation of Studio 5 is desig show the flexibility and variation of ti collection method. It uses unevenly points in a room lit from two opposi

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
900	444	465	605	458	689	582	686	135	136	158	330	139	359	94
930	641	802	1008	877	1230	1284	1270	261	264	291	483	174	411	132
1000	499	420	990	435	1130	880	721	146	134	186	467	188	395	162
1030	1533	1043	1555	756	1807	912	1422	210	232	295	557	241	511	152
1100	1026	654	2731	1040	1364	1584	2090	221	187	198	1093	451	543	370
1130	570	1390	1320	720	1410	1760	1700	502	436	518	943	365	629	279
1200	680	820	3060	640	1311	721	1165	110	238	439	877	454	613	515
1230	2690	1339	3240	1881	3730	1971	2950	543	720	589	689	357	758	326
1300	960	500	1200	1300	1600	1150	1120	220	360	500	500	400	200	440
1330	1800	1260	2150	2110	2370	2060	2030	580	550	680	570	370	600	360
1400	1236	825	1608	836	1669	1625	1635	131	212	222	354	306	704	394
1430	1222	782	1083	891	1011	1255	832	100	192	143	553	168	532	196
1500	1123	1009	1280	1265	1537	1583	1609	262	404	373	738	278	625	261
1530	602	856	1001	830	1146	1266	1315	191	304	281	910	217	577	239
1600	481	552	778	713	893	1206	1075	212	224	219	888	412	903	357
1630	227	302	450	470	520	610	530	100	150	140	200	120	320	140
1700	237	190	375	291	410	387	452	70	123	90	412	121	381	152
1730	177	126	233	157	269	240	323	36	82	52	327	175	363	86
1800	74	80	115	102	133	122	135	45	56	40	168	70	150	42
1830	22	26	38	37	44	41	52	14	18	18	47	25	66	26



Figure 5: Map of 'fetch' in the city of Edinburgh: a field for the Edinburgh city sections. Drawing by Alistair Blake, Nikita Mei, Sandy Murray, Nicholas Sharp

A city drawing, a map of the "Fetch of Light", begins to index and correlate the findings from the empirical studies through a literal 'drawing out' [Fig. 5]. The Fetch map acts as an archival record which tethers the collected data and its particular methodologies. Yet it also establishes a field for future propositional design work oriented by the idea of 'fetch' as an interpretation of particular experience in the existing city. The five New College groups (Sanctuary, Chiaroscuro-Stairs, Photocopy room, Library windows, Distillation of Illuminance) collaborated on a further indexical drawing [Fig. 6] which relationally situated their 'Collecting light' responses in the studio: installed findings through film, model and drawing, in designed transposition. The project outcome is both a collection of situated knowledge of (day)light in one part of the city, and a collective spatial propositional field for future invention. New qualities of light become evident in this made city:field (the re-configured studio), experienced in an end of project exhibition, and worked with in subsequent design projects.

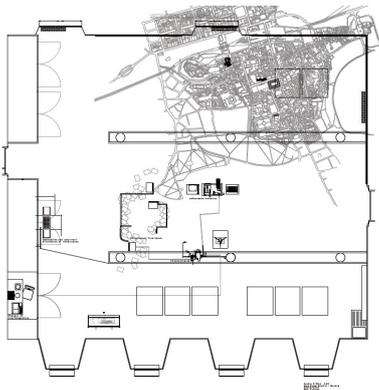


Figure 6: Drawing of 'collected light' from New College, Studio 5, Minto House, October 2009. The case featured in this text is situated adjacent to the west wall of the room. Drawing by Tom Fotheringham.

## NOTES

1. This focuses on twentieth century case studies of projects where architects had a particular interest in light and window design. Light is considered in terms of shaping space and also conferring meaning in a wider context.
2. A short 3 week project for the 44 March and 12 MScAAD students who participated in the Marseille Irrigations studio led by Suzanne Ewing 2009-2011, with Victoria Clare Bernie. See *Irrigations: Marseille 2009-2011* (Architecture, The University of Edinburgh). Subsequent projects, such as 'City Light Index' in the Lisbon 2012-2014 studio, develop some of these approaches and methods as an active part of architectural field/work and design formulation.

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