

Moving and Making Strange:

A Design Methodology For Movement-based
Interactive Technologies

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Certificate of Authorship/Originality

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

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Contents

1	Introduction	1
1.1	Background	5
1.2	Theoretical foundations	7
1.3	Research design	10
1.4	Contributions of the research	11
1.4.1	Design methodology of Moving and Making Strange . .	12
1.4.2	Laban movement analysis and Labanotation as a design tool	13
1.4.3	Suchman’s analytic framework adapted as a design tool	14
1.4.4	Extension of existing design tools to explicitly represent moving bodies	14
1.4.5	Patterns of watching	15
1.4.6	New methods for generating, enacting and experiencing movement	15
1.5	Thesis structure	15
2	Interaction Design	17
2.1	Phenomenologically-inspired approaches to interaction design .	18
2.2	Ethnographically-inspired approaches to interaction design . .	20
2.3	Interaction analysis and Suchman’s analytic framework	23
2.4	Design representations and ways of seeing	26
2.4.1	Visual representations and visual communication practices	28
2.4.2	Conceptual design frameworks	30
2.4.3	Personas and scenarios	33
2.4.4	Summary—Design representations and ways of seeing .	35
2.5	Methods and techniques for working with the moving body . .	36
2.5.1	Bodily understanding	36
2.5.2	The moving body as a design material and design sensibility	38
2.5.3	Enactment and physical role-playing	41

2.5.4	Summary—Methods and techniques for working with the moving body	46
2.6	Summary—Interaction Design	47
3	The Moving Body	49
3.1	The central role of movement	50
3.2	Understandings of the moving body	52
3.2.1	Movement as anatomical, mechanical function	53
3.2.2	Movement as expression and transformation	54
3.2.3	Movement as perception	55
3.2.4	Movement as felt, kinaesthetic experience	57
3.2.5	Movement as a communicative act	58
3.2.6	Summary—Understandings of the moving body	62
3.3	Analysing and describing movement	62
3.3.1	People analysing and describing movement	62
3.3.2	Movement notations	68
3.3.3	Algorithmic analysis of movement	73
3.3.4	Summary—Analysing and describing movement	75
3.4	Laban movement analysis and Labanotation	76
3.4.1	Laban movement analysis	77
3.4.2	Labanotation	80
3.4.3	Applications in computing fields	84
3.5	Summary—The Moving Body	85
4	Research Methodology	87
4.1	Issues of methodological validity	90
4.2	Project I—Eyetoys	92
4.2.1	Research methods	92
4.3	Project II—Bystander	94
4.3.1	Research methods	95
4.4	Project III—Falling into Dance	96
4.4.1	Research methods	99
4.5	Summary—Research Methodology	100
5	Project I. Eyetoys	101
5.1	Introduction to Eyetoys	102
5.2	Experimental setup	105
5.3	Initial data analysis	105
5.4	Movement analysis and Labanotation	107
5.4.1	Examples of Labanotating	109
5.5	Interaction analysis—Suchman	115

5.6	A critique of Labanotation	119
5.6.1	Functional and performed movement	119
5.6.2	Simplicity and specificity	120
5.6.3	Context of movement	122
5.6.4	Reading and writing	123
5.7	Findings	124
6	Project II. Bystander	126
6.1	Overview of Bystander	127
6.2	Understanding and representing moving bodies	132
6.2.1	User studies	133
6.2.2	Movement-oriented personas and characters	135
6.2.3	Movement-oriented scenarios and scripts	137
6.2.4	Movement schemas in Labanotation	140
6.2.5	Suchman's analytic framework as a design tool	145
6.3	Enacting design representations of moving bodies	151
6.3.1	Enactment and physical immersion for design reflection-in-action	154
6.3.2	Situated understandings of notions of presence, movement and stillness	155
6.3.3	Movement, stillness and audience engagement	157
6.4	Exhibition—how did visitors move?	159
6.5	Findings	164
7	Project III. Falling into Dance	166
7.1	Study I—The falling body	168
7.1.1	Interviews and physical demonstrations	169
7.1.2	Analysis from the experiential perspective	172
7.1.3	Analysis from the external or machine perspective	177
7.1.4	Findings	185
7.2	Study II—Inventing and choreographing movement	186
7.2.1	The Divine and Bodily Experience	187
7.2.2	Generating and devising movement	191
7.2.3	Documenting movement	196
7.2.4	Findings	200
7.3	Findings	202
8	Reflection on Tools	204
8.1	Suchman's analytic framework as a design tool	204
8.1.1	Eyetoym	204
8.1.2	Bystander	206

8.1.3	Summary—Suchman’s analytic framework as a design tool	208
8.2	Laban movement analysis and Labanotation	209
8.2.1	Eyetoy	209
8.2.2	Bystander	210
8.2.3	Falling into Dance	210
8.2.4	Summary—Laban movement analysis and Labanotation	211
8.3	Summary—Reflection on Tools	211
9	A Design Methodology of Moving and Making Strange	213
9.1	Making strange	214
9.2	Genesis of methodology	216
9.3	What is in the methodology	217
9.3.1	Investigating movement	221
9.3.2	Inventing and choreographing movement	226
9.3.3	Observation, interrogation and analysis of moving bodies	228
9.3.4	Describing and documenting movement	232
9.3.5	Re-enacting movement	239
9.3.6	Visual analysis and representation of moving bodies . .	242
9.3.7	Exploring and mapping human-machine interaction . .	246
9.3.8	Representing machine input and interpretation of moving bodies	250
9.4	Summary—A Design Methodology of Moving and Making Strange	252
10	Conclusions and Future Work	254
10.1	Research questions revisited	255
10.1.1	Question 1: What understandings of human movement are relevant?	255
10.1.2	Question 2: How and in what ways can the experiential nature of the moving body be accessed and understood?257	
10.1.3	Question 3: How and in what ways can the moving body be described and represented?	257
10.2	Future Work and Applications	259
10.2.1	Validating the methodology in actual practice	260
10.2.2	Movement improvisation scores for enactment and evaluation	260
10.2.3	Choreographing new movements	260
10.2.4	Body-Mind Centering and Bodyweather	261
10.2.5	Extension to other kinds of movement-based interactive technologies	262

10.2.6 Applicability to phenomenologically-inspired and ethnographically-
inspired approaches to technology design 262

List of Figures

1.1	Diagram of thesis contributions	12
2.1	Suchman's analytic framework	25
3.1	Frame by frame motion analysis by Muybridge, first published in 1887	65
3.2	An example of a dance notated in the Feuillet system of movement notation, 1700. The spatial arrangements or floor plans are overlaid with notational symbols for moving bodies. Reproduced from the original publication by Guest, 1984.	69
3.3	The Benesh staff. Reproduced from the original publication by Guest, 1984.	70
3.4	A step-hop-hop pattern of movement notated using the Benesh system. Reproduced from the original publication by Guest, 1984.	70
3.5	A depiction of the axis of conical movement in the Eshkol-Wachmann system. Reproduced from the original publication by Guest, 1984.	71
3.6	A score for the dance piece, <i>Diminishing Series</i> , notated using the Eshkol-Wachmann system. The score is read from left to right. Reproduced from the original publication by Guest, 1984.	72
3.7	An example of an integrated score documenting the movement analysis of a dance from South West India called Cholkettu. Reproduced from the original publication by Bartenieff et al., 1984.	74
3.8	Effort Cube	78
3.9	Measurable and Classifiable Aspects of Effort elements. Reproduced from <i>The Mastery of Movement</i> , Laban (1971)	79
3.10	The Laban staff. Reproduced from the original publication by Guest, 1984.	81

3.11	Symbols for direction and level of movement in the Laban system. Reproduced from the original publication by Guest, 1984.	82
3.12	An example of a Laban-notated score for a dance, Balanchine's <i>Serenade</i> . It includes the Structural description and floor plans and an indication of the timing of the movements with the music. Reproduced from the original publication by Guest, 1984.	83
3.13	An example of a floor plan illustrating the paths of movement for a group of four people in the upper right hand quadrant. Repeat signs indicate that all four groups do the same thing. Reproduced from the original publication by Hutchinson, 1977.	84
4.1	Diagram of research design	88
4.2	Summary of research methods used in each project	90
4.3	Table of research methods for the Eyetoy project describing the instantiation of each method	93
4.4	Table of research methods for the Bystander project describing the instantiation of each method	95
4.5	Diagram showing revision of Falling into Dance project	98
4.6	Table of research methods for the Falling Into Dance project describing the instantiation of each method	99
5.1	Beat Freak	104
5.2	Kung Foo	104
5.3	Experimental setup	106
5.4	Actions and characteristic movements for game-play	108
5.5	Characteristic movements of game-play	108
5.6	Labanotation for Beat Freak action Participant 2	111
5.7	Legend of Labanotation symbols used in this study	112
5.8	Labanotation for Kung Foo action Participant 5	113
5.9	Performed movements for participant 5, Kung Foo	113
5.10	Functional movement and individual variations	114
5.11	Interaction analysis for the Beat Freak game-play by participant 8	117
6.1	Photograph from archive of crime scenes	128
6.2	Image of Bystander visuals showing the flock, images and text haikus	130
6.3	Mapping of user activity to system states	131
6.4	Example of a persona—old folk	136

6.5	Example of a persona—young mother and toddler	136
6.6	Making a scaled-down model of room and cardboard characters during development of scenarios	138
6.7	Excerpt from the user activity script for scenarios 1 and 3. Note that movement schema 2 is in Figure 6.8, movement schema 15 is in Figure 6.9 and movement schema 16 is in Figure 6.10.	141
6.8	Movement schema 2 showing a head-poker	142
6.9	Movement schema 15 showing skimmers	143
6.10	Movement schema 16 showing a group of children entering	143
6.11	Legend for Labanotation symbols	144
6.12	Audience Perspective—Interactivity Table, Scenarios 1 and 3	149
6.13	Machine Perspective—Interactivity Table, Scenarios 1 and 3	150
6.14	Scenario enactment in a full-scale prototype environment with the characters, Betty and Val	153
6.15	Excerpt of observed visitor movements and positioning, audience behaviours and patterns of watching. Each duration labelled a, b, c ... corresponds to a temporal phase in the Labanotation floor plan.	161
6.16	Transcription of visitor movements and positioning, drawn in a Labanotation floor plan, for a 1 minute, 46 second excerpt	162
6.17	Catalogue of patterns of watching: movement and stillness in audience engagement with Bystander	162
6.18	A series of three stills of actual visitor activity taken from the overhead camera aerial view	163
7.1	First-person experiential accounts of falling	173
7.2	Characteristic component of movement—movement process/technique—for describing the act of falling, from an experiential perspective. Each description is labelled with an index to the participant, for example, P4 refers to Participant 4.	178
7.3	Characteristic component of movement—sensing and awareness—for describing the act of falling, from an experiential perspective. Each description is labelled with an index to the participant, for example, P4 refers to Participant 4.	179
7.4	Characteristic component of movement—felt quality—for describing the act of falling, from an experiential perspective. Each description is labelled with an index to the participant, for example, P4 refers to Participant 4.	179
7.5	Movement sequence for participant 1 in the act of falling, annotated with descriptions of the process and technique of falling	180

7.6	Movement sequence for participant 4 in the act of falling, annotated with descriptions of the process and technique of falling	180
7.7	Silhouettes of participants falling	181
7.8	Mapping of changing positions of the head, centre of torso and feet for participant 4	182
7.9	Dynamically changing pattern of spatial shaping for participant 4	183
7.10	Effort-Shape description for participant 1	184
7.11	Effort-Shape description for participant 4	184
7.12	Description of acts 2 and 3	189
7.13	Contents of inspirational resource kit	189
7.14	Scenario fragments—initial	190
7.15	Esther’s use of the kit for documenting her choreographic and movement ideas	192
7.16	Gloria’s use of the kit for documenting her choreographic and movement ideas	193
7.17	Close-up of Esther’s use of the kit	195
7.18	Directions for choreographed movement	197
7.19	Movement sequence of Act 3, Section 1, with Laban Shape analysis	198
7.20	Spatial movement schemas for Act 2, Section 1	199
7.21	Machine input schema for Act 2, Section 1	201
8.1	Adaptation of Suchman’s analytic framework for use in analysing interaction of players with the Eyetoy games	205
8.2	Adaptation of Suchman’s analytic framework for use in exploring and mapping movement-based interactivity in Bystander	206
9.1	The three perspectives of the mover, the observer and the machine offered in the design methodology of Moving and Making Strange	217
9.2	The design methodology of Moving and Making Strange: Diagram of activities and how they are related. The labels on the arrows indicate the data generated by one activity and the direction of the arrow indicates the flow of data from one activity to another. The activities are numbered purely to assist identification; the numbering does not indicate a linear order.	218
9.3	Summary of activities, methods and tools and the perspectives/data they offer in the design methodology of Moving and Making Strange	219

9.4	The activity of investigating movement and its place in the methodology	221
9.5	An exercise for investigating kinetic variations of movement	223
9.6	An exercise for exploring the head righting reflex in balancing and the involvement of our visual and kinesthetic sensing	224
9.7	An exercise for generating movement through imagery	225
9.8	The activity of inventing and choreographing movement and its place in the methodology	226
9.9	The activity of observation, interrogation and analysis of moving bodies and its place in the methodology	228
9.10	First-person experiential account of the process and felt experience of falling by a skilled mover	229
9.11	Definition and examples of characteristic components of movement for the act of falling by skilled movers	230
9.12	Movement sequence for participant 1, annotated with descriptions of the process and technique of falling	231
9.13	The activity of describing and documenting movement and its place in the methodology	232
9.14	An example of a movement-oriented scenario taken from the Bystander project. It is built on the movement-oriented personas of Val and Betty.	234
9.15	Directions for choreographed movement in Act 2, section 2	235
9.16	Gloria's use of the resource kit for documenting her choreographic and movement ideas	235
9.17	Effort-Shape analysis for a choreographed movement sequence	236
9.18	An exercise for developing skill in applying the Laban system of movement analysis for observation	238
9.19	The activity of re-enacting movement and its place in the methodology	239
9.20	Scripted movement corresponding to a movement-oriented scenario	240
9.21	Examples of three movement scores for an interactive, immersive space like Bystander	241
9.22	The activity of visual analysis and representation of moving bodies and its place in the methodology	242
9.23	Mapping of changing positions of the head, centre of torso and feet for participant 4. The changing spatial shaping of the body is presented in its trajectory through space and time.	244
9.24	Effort-Shape description for participant 4	244
9.25	Spatial movement schema 2	245

9.26	The activity of exploring and mapping human-machine interaction and its place in the methodology	246
9.27	Diagram of model of action and perception for human and machine	247
9.28	Diagram illustrating how the Moving-Sensing schema brings together various activities and tools. The ovals represent activities and the rectangles represent design tools or representations.	248
9.29	Suchman's analytic framework adapted specifically for Project I (Eyeto)	249
9.30	Suchman's analytic framework adapted as the <i>interactivity table</i> specifically for Project II (Bystander)	250
9.31	The activity of representing machine input and interpretation of moving bodies and its place in the methodology	250
9.32	Machine input schema from Project III showing the choice of machine input and interpretation for a sequence of choreographed movements	251

Abstract

This thesis develops and presents a design methodology that enables designers to work with the moving body in the design and evaluation of interactive, immersive environments built on motion-sensing technologies. The notion of *making strange*, that underpins the methodology, calls for designers to re-examine and revitalise their assumptions and conceptions of the moving body through bodily-based movement inquiries.

This thesis addresses research questions about ways of understanding human movement, of describing and representing human movement and of accessing the felt experience of the moving body in the emerging field of movement-based interaction design. The research questions were explored through a series of three distinct, yet related, projects, each one focusing on different aspects of designing for moving bodies in interactive, immersive environments. The first project analysed an existing interactive product, Sony Playstation2© Eyetoy™, as a prototype of future movement-based interactive, immersive environments. The second project involved the design and development of a specific interactive, immersive artwork, Bystander. The third project worked with trained dancers and physical performers in a constructed design situation.

The contributions of this research are first and foremost the *design methodology of Moving and Making Strange*: a design approach to movement-based interaction that prioritises the lived experience of movement by both designers and users and values the creative potential of the experiential, moving body. It consists of methods and tools for exploring, experiencing, describing, representing and generating movement that enable designers to shift between the multiple perspectives of the mover, the observer and the machine. It makes particular contributions as follows:

- Laban movement analysis and Labanotation as a design tool.
- Moving-Sensing schema: Suchman's analytic framework adapted as a design tool.
- Extension of existing human-centred design tools to explicitly represent moving bodies, in the form of movement-oriented personas and movement-oriented scenarios.
- Patterns of watching: a catalogue of audience behaviour in terms of movements and stillness in relation to engagement with a specific interactive, immersive artwork.
- New methods for generating, enacting and experiencing movement, sourced from dance and movement improvisation practices.