Missing in Action: The Return of Real-Time Urban Observation

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The act of the social survey is a long and disciplined task, which requires a designer, engineer, social scientist to create an inventory of data representing activity on a site. In the 1960's, environmental engineers like Jane Jacobs and Jan Gehl developed approaches to observing public life, informing better approaches to urban planning. In Gehl's book, "How to Study Public Life," he provides a series of procedural methods of how to document the site through the observation of habitation and movement through counting individuals and layering the accumulated physical spatial data such as walking paths and occupancy on a single drawing. This methodology demonstrates to students that environments are always active, and not merely formal grounds for insertion of autonomously designed material. More specifically, it prefaced the people as the measurement of space and occupancy. More recently, physical real-time observation has been abandoned in favor of teaching students predictive algorithmic simulations wherein the paths of city would be projected based purely on formal morphology and predictive behavior modifiers and coefficients through open source data. Removing the student's need to engage and understand the space and its context, including observing individuals movements and their responses to environmental conditions. We need to get students and designers out of the digital model and back into the city armed with new technology!

INFORMATION COMPUTATION AUTONOMY

The digital turn in architecture that occurred in the last decade of the twentieth century and the first decade of the twenty-first brought forth a radical shift not just in the formal techniques employed in schools and practice on the making of form, but also the research methodologies and means by which architect's garnered information about the spaces in which they would be designing form. Due to the fingertip access of information provided by Geographic Information Systems and satellite photography, Students have been moving away from understanding site conditions through real time observations.. Previously students would collect data from the site through a variety of sampling techniques such as questionnaires, interviews, observations and analysis of census data[1]. It was believed that these models would provide students with a better understanding of existing site conditions inclusive of the human factors present upon which they could create a

base of knowledge to build their future design interventions from. Technology has produced an effect of methodology, removing the onsite observations for the design and replacing it with digital and virtual observations of previously collected data in which to draw observations from. This paper questions the reconstruction and rectification of a lost and perhaps controversial aspect that pedagogical procedure towards students understanding and education within the design disciplines by suggesting the use of other new technological devices that both bridge the gap and provide other unseen possibilities[2].

THE DIGITAL TURN - INFORMATION AS AUTONOMOUS DESIGN

The twentieth century has seen designers abandon the camera and the streets in favor of both the information and prediction, returning back to the studio or more specifically the computer. Over the past twenty years, we have witnessed a growing trend in design education and practice where designers first and foremost seek information digitally and then subsequently design form and then test that form in predictive simulation without touching or encountering the public realm. This phenomenon is first and foremost empowered by the growth and distribution of web based interfaces such as google earth and Geographic Information Systems which through their spatial information such as informational overlay maps and satellite coupled with their visual surveillance possibilities such as 'street-view' provide the designer with a host of site-like information without leaving the confines of the office. Arguably, the access to such information been synchronous with the ability to work remotely, and allow designers to gain information about site which they are unable to physically access. The above systems have also been augmented by use in the governmental and private sector, where we have seen much attention to real-time tracking information provided by the informational age/ The government's service Strava, has demonstrated an ability to provide low-resolution data about the spatial movements of individuals marked by cellular signals, wherein each user becomes a moving point superimposed on a spatial map. In higher resolution formats, the retail sector has also engineered and commodified the realm of spatial information, where wifi data is offered to patrons in a retail setting in exchange for the study of their behavior and movement throughout the interior setting of commerce. Meanwhile, the designer, who has begun to be
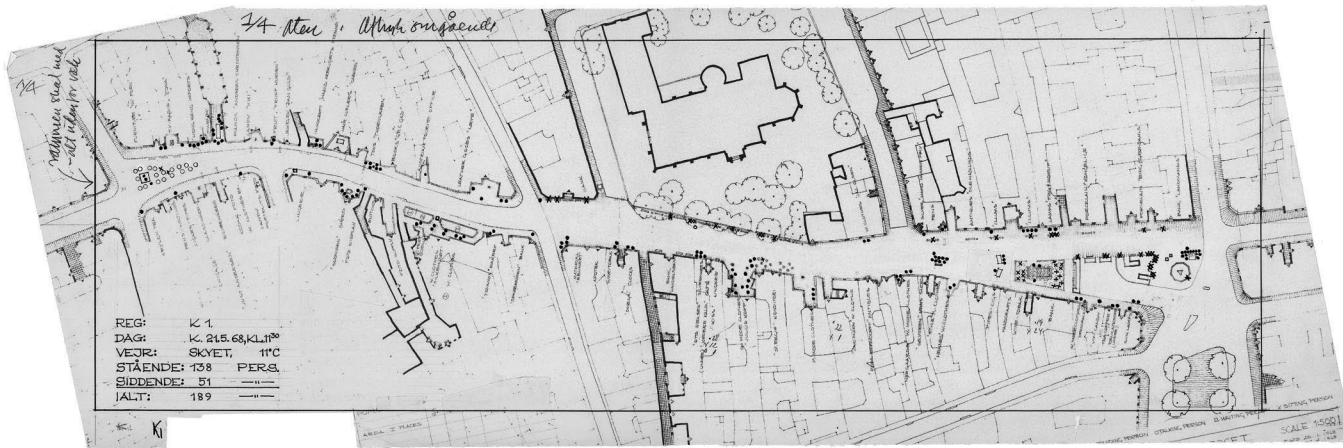
Figure 1. 1968 Jan Gehl drawings of street observations in Strøget, Copenhagen Image courtesy of Gehl.

able to access this information has allowed to influence the parameters of design methodology within the realm of the office. Academically, physical real-time observation has been abandoned in favor of teaching students predictive algorithmic simulations wherein walking paths of city would be projected rather than observed. In example digital software programs such as PedSim, these simulated environments would based on formal morphology and predictive behavioral coefficients received through open source data or even worse based on the subjectivity and predilections of the designers understanding. Notably, in all of these mentioned technological advances availed to architects, the designer is deprived of a familiarity or awareness of the body, and the everyday residuals would be encountered in the realm of reality. In the above simulations, the person or more specifically the body is neutralized into a singular form, uniform point or icon of humanity.

OBSERVING HUMANITY

The latter half of the twentieth century witnessed similarly minded criticisms of the modernist period based on its standardization of the body, and the individual to be planned for. Notable criticisms surrounded images of master planning processes such as the canonical photo of Le Corbusier's "hand of the architect". Speculating the god-like hand of the architect, notably a white male's hand, would wave above a model conceived of and produced in an office for a remote context of standardized individuals not observed in person. This Architect's "Dream City" was held in high regard, and has projects embodied in the overall master plan of the city, organized, harmonious and methodical like a spectacular gadget or machine[3]. It does not display the truths of the city, the diversity, complexity, and change within it. How can these models be imagined when they don't present the realities of the conditions at hand? Several leading post 1960's theorists called for a critical halt to this commanding looming approach to the design of the urban environment. Urban theorists and architects such as Jane Jacobs, Jan Gehl and William Whyte,

through their work began a critique of autonomous planning and focusing more on the context. Criticizing the detachment between the architect working abstractly and remotely, and posing the question and observations from what they saw and understood of the urban world through active engagement with the context. Jacobs, in her book The Death and Life of Great American Cities, describes her observations throughout the neighborhoods of New York City. Her famous, "eyes on the street," brought attention to the complexities of the areas contained between buildings and within the thin sidewalks framing the blocks. The density of cities like New York make the sidewalk active agents in the daily lives of inhabitants, it is where one sees and is seen. Its engagement becomes part of a routine.

 "...the sidewalk must have users on it fairly continuously, both to add to the number of effective eyes on the street and to induce the people in buildings along the street to watch the sidewalks in sufficient numbers. Nobody enjoys sitting on a stoop or looking out a window at an empty street. Almost nobody does such a thing. Large numbers of people entertain themselves, off and on, by watching street activity."
- Jane Jacobs, The Death and Life of the Great American Cities

Following Jacobs, Danish author and architect, Jan Gehl, links observations of public life to develop insights into better urban planning. In 1968, he creates a series of drawings from his observations on the street Strøget in Copenhagen. Documenting where people would stand, sit, wait, and talk over the course of many seasons and throughout the course of the day (Figure 1). He wanted to understand the patterns that emerged over time in a single public space and test a representation strategy in which to convey the information.

 "This method provides a picture of a moment in a given place. It is like an aerial photo that fast-freezes a situation. If the entire space is visible to the observer, he or she can plot all the

Figure 2: Image capture from ©1967 Social Life of Small Urban Spaces, William H. Whyte, All Rights Reserved "Used by Permission" Courtesy Direct Cinema Limited, Inc.

activities on the plan from one vantage point. If the space is large, the observer must walk through it, mapping stays and putting the many pieces together to get the total picture. When walking through a space, it is important for observers not to be distracted by what is going on behind them, but rather to focus on what is happening abreast. The point is to capture one single picture of the moment rather than several"[4]. -Jan Gehl, How to Study Public Life

Gehl develops a series of procedural methods of how to document a site through the observation of habitation and movement. Counting individuals, and layering the accumulated physical spatial data, such as walking paths and occupancy on a single drawing. This methodology demonstrates to students that environments are always active, and not merely formal grounds for insertion of autonomously designed material. More specifically, it prefaced people as the measurement of space and occupancy. The Gehl Institute created a series of guidelines for communities to be able to perform their own surveys – taking into account, age and gender of users when observing public space use[5].

William Whyte, urbanist, analyst, and journalist, walked and surveyed city streets for over 16 years. He would watch and monitor people in public areas, utilizing time-lapse photography to chart the movement of pedestrians throughout an area (Figure 2). What emerged through his analysis and documentation is an animated view of what could be considered distinctly apparent, but the often unnoticed movements of individuals.

Whyte wrote a book in addition to making a film called, "The Social Life of Small Urban Spaces," wanting to address issues of quality of life to both individuals and society as a whole. He believed that we have a moral responsibility to design spaces which facilitate interaction and engagement. He wanted a new

approach to the designing of public spaces, one that was bottom-up, not top-down. Using his approach, design should start with a thorough understanding of how people use spaces, how they would like to use spaces. Whyte postulated that people vote with their feet, they use spaces that are easy to use and are comfortable. They avoid spaces that are not. Through observation and conversations with users, he believed you could learn everything you needed to know about space design[6]. Utilizing and expanding on this knowledge to work in creating places that shape livable communities. We should therefore enter spaces without theoretical or aesthetic biases, and we should "look hard, with a clean, clear mind, and then look again - and believe what you see."

CATALOGUING THE EVERYDAY

These three agents could be criticized on the stance that they were cultural theorists, anthropologists and planners, and not designers and thereby did not offer a formal possibility, or position towards the design of the city. However, it should be noted that several times they call for observation of the body and public space entered into the architectural discourse as a formal mediator. The drawing, 'From the Dining Table' was originally published by Sarah Wigglesworth and Jeremy Till in an issue of Architectural Design in 1998. The issue was entitled, "Everyday Architecture" in which they wrote, 'Our aim in compiling this issue is to recognize what high architecture has previously suppressed, but was never able to exclude, by seeing the world from within rather than from above. We explicitly acknowledge the everyday as a productive context for the making, occupation and criticism of architecture (Figure 3) [6].

The team developed a well-known and often miss-cited drawing analysis of the everyday occurrences that transpired on their dining table, which was often used as a conference table in their office. The drawings demonstrate the reconstitution of their actions, 'The surface retains the patina of time, the traces of past events indelibly etched into the surface. At no time can the Dining Table be said exclusively to represent one side of life more than another. This ambiguity is an essential motif in the reinvention of the new house and office.'

While this series of plans of a table might be purely expressive of the ideas of occupancy and the messiness of human use of an ordered space, Till + Wigglesworth go further to find form in the disorder. The plan of the table became a story narrative for the development of the plan of a house, a formal set of aesthetics founded in Lefebvre's 'The Everyday,' argument which moved forth from observable actions of individuals [7]. In other-words, observational phenomena of the residual space of the body became the grounds for informing form.

THERMO DATA COLLECTION

In a quest to be able to observe the sun more closely. In the 1800's William Hershel discovered infrared rays while researching prisms in which to separate the colors of the rainbow .

THE LAY OF THE TABLE
An architectural ordering of place, status, and function. A frozen moment of perfection. This is how architects see.

THE MEAL
Use begins to undermine the apparent stability of the (architectural) order. Traces of occupation in time. The recognition of life's disorder.

THE TRACE
The dirty tablecloth, witness of disorder. A palimpsest. This is the reality of domestic life!

THE LAY OF THE PLAN
The trace transformed into the plan of our house. Clutter filling the plan(s). Domestic difficulties interrupting the order of the grid.
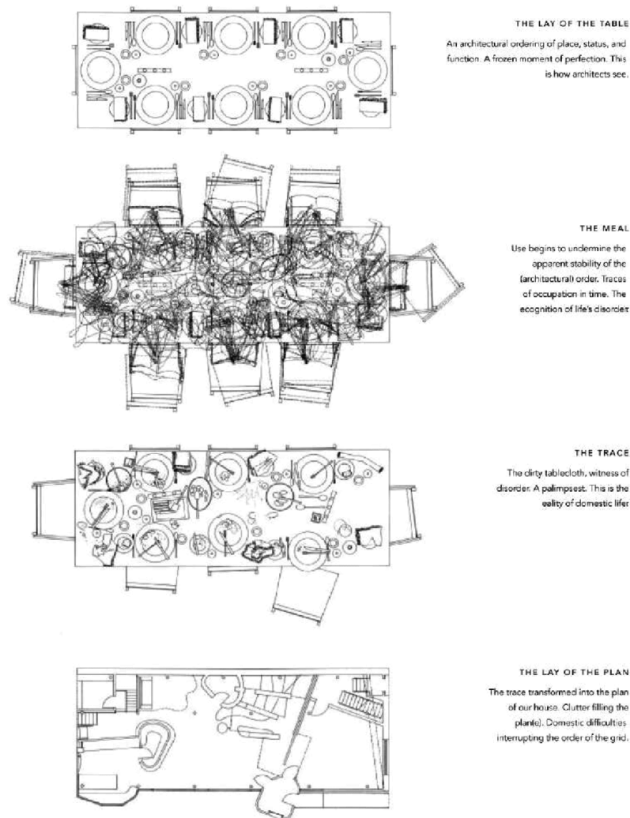
Figure 3: Diagram series of a typical meal. THE INCREASING DISORDER OF THE DINING TABLE © Sarah Wigglesworth, 1997

Subsequent uses included using thermographers to measure temperatures of the body to identify areas of illness and inflammation [8]. Today, certain levels of thermography are used to identify tumor growth based on the rapidly splitting cells and adjustment in heat levels. The eye can detect radiation in the visible spectrum, referring to the amount of energy given off by objects, there are multiple bandwidth of radiation that fall outside of the visible spectrum, emitted in the environment. Thermographic cameras detect radiation in the infrared range of the electromagnetic spectrum producing translations of that radiation, just below the range of human vision.

This technology is used by a variety of industries including medicine, environmental, agricultural, chemical, building and material testing which use thermography to scan or analyze their products for measurements and quality. Since infrared radiation is emitted by all objects based on their temperatures, thermography makes it possible to "see" one's environment with or without visible illumination. Thermography demonstrates the heat or emissivity of an object in a smooth gradient range of intensity that is processed most cleanly in black and white. For more easily recognizable or discernible differences between parts of the image a 'pseudo-color' or substituted color range is provided.

Thermal imaging provides a new response to the social problems presented within the Gehl Institute cataloguing techniques wherein specific individuals characteristics were measured. Thermography, removes the skin-color and gender of the individual while retaining the figural outline and specificity of the body which is lost in the Wifi or GPS data signal point methods described above. It should not matter the age or race of the people whom use a space, the more that it is being used! Utilizing a thermographic radar, the infrared spectrum provides a cloak of anonymity in its heat colorful overlay, unifying biological and ecosystems into their radiant energy rather than their visible differences. To the above point, thermography heightens the observation of site beyond merely the biological organism whom are carrying phones, to include our energy and heat emitting friends in the animal kingdom, raising the stakes of design of space by pushing past a human centric point of view.

Most notably, due to its ability to detect heat loss, the thermographic camera adds the temporal dimension which is often lost in both video and still photographic methods employed by Whyte above. As thermography measures the heat loss and heat build-up on surfaces, which is affected by biological occupation, it is capable of witnesses and drawing attention to the tracery of these effects over time. Surfaces, which organisms occupy for long periods of time accumulate heat, and distribute this over time, dependent on the material's heat loss coefficient, which allows the designer to better understand preference at the smaller scale level of details than pure occupation.

NEW THERMOGRAPHIC OBSERVATIONS
We conducted a series of tests in our office, with handheld thermographic cameras observing the every conditions of architectural spaces at and on various scales, revealing some unexpected benefits of this new technology.

Within an office environment a research group was formed with former students to evaluate the handheld thermographic camera as a means of observing the everyday conditions of architectural spaces. The team strategically examined a series of scales, revealing some unexpected benefits of this new technology. The first examination, "Dinner Table Redux," was held during a late night dinner meeting with shared plates at the office's conference table. Over the course of the meal, the passing and sharing of the hot plates transferred heat onto the table and would leave momentary heat signatures from where the plate was taken, leaving a ghost trace of the movement of the food. It was noted that the thermo reading highlighted the awkwardness of our conference room layout, as residual heat was transferred to the walls being touched as one enters or leaves the room. What was also telling in this reading similar to Wigglesworth drawing was the rhythmic activity and movement of the passing of plates and motions during the meal, resulting in the cooling of the food and motion as the meal wound down (Figure 4).
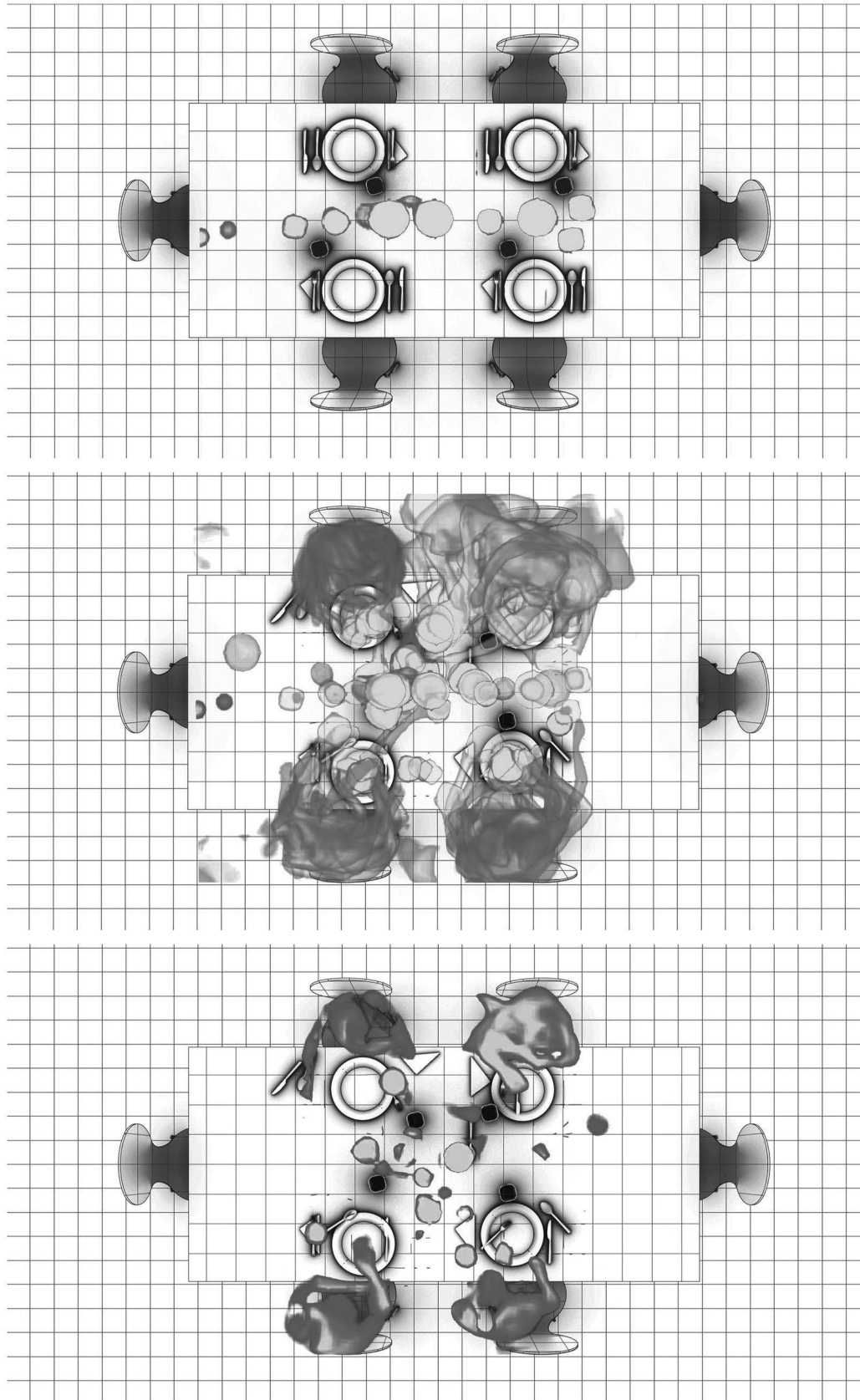
Figure 4: Dinner Table Redux. Thermographic readings of the office conference table during a late night meal. Image from op-AL

A second scale of study utilizing thermographic spatial imaging was tested within open air retail courtyard, lined with shops and restaurants. Over the course of a week at four different times of day, we wanted to be able to analyze the similarities and differences in the movements. There were obvious findings, the weekend was a busier time for traffic than the week. The mornings were slower times for pedestrians than the afternoons and evenings. However, the findings through the thermography camera allowed us to analyze the choice routes pedestrians would take based on temperature. If the pavement and entrance from that area of the courtyard was warmer, there were a higher volume of pedestrians seeking the shade route. The eating area which was located in the shade of the building seemed to have longer and more guests dining al fresco than the restaurant across the way located on the sunnier side of the courtyard with umbrellas (Figure 5).

The reintroduction of real time observation coupled with the new tools of thermographic cameras will re-calibrate the means of student's evaluation and analysis of site, engaging an active process rather than passive. There exists a fine balance between the deployment of digital tools and the experience of visiting a site in person that provides the designer the ability to understand the larger influences and patterns, but also the nuances and variations at the level of the body. The introduction of this new technology into the existing procedures allows for adaptive methods of engagement as opposed to supplanting procedures by following new technique. These visits and ways of understanding a site are crucial to not just a student's development, but also to practitioners as a way to both analyze and anticipate the opportunities and trends within a context.
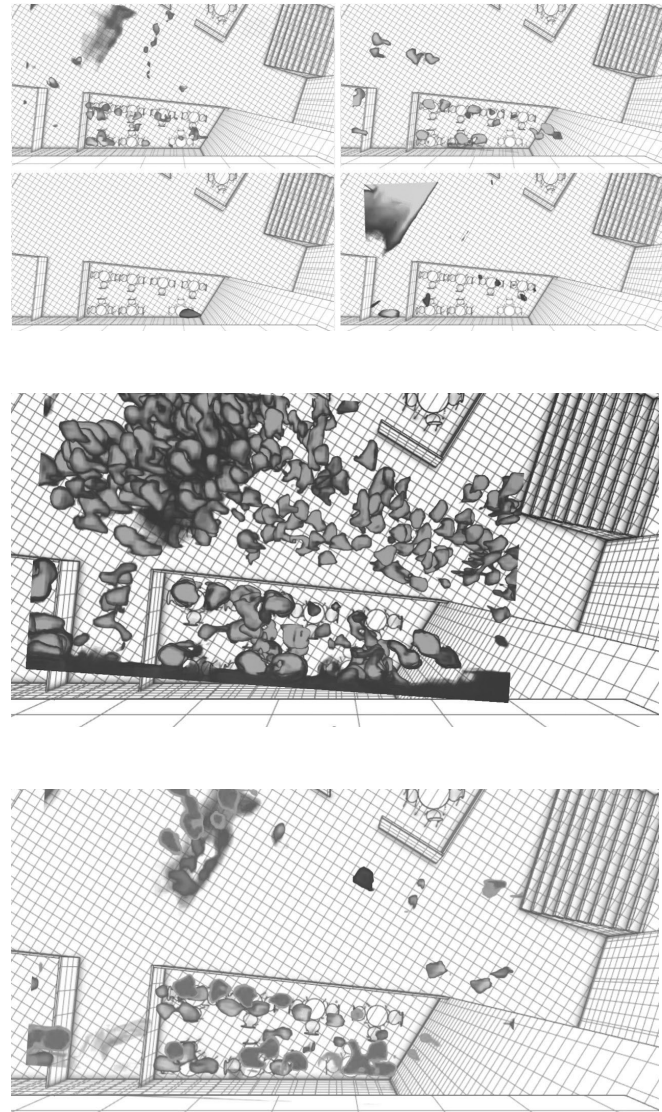

Figure 5: Top: Different stills over the course of one day. Middle: Overlapping movement over the course of one day. Bottom: Different days are colored with different gradients. Images from op-AL

ENDNOTES

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