TAKING STOCK

by

Zain Karsan

Bachelor of Architectural Studies
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SUBMITTED TO THE DEPARTMENT OF ARCHITECTURE IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

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ABSTRACT

This thesis is sited in a near and uncertain future in the Rust Belt of America. The title of this thesis refers to three interrelated conditions, industrial technology, material culture and architectural agency. 'Taking' refers to the act of taking control and reclaiming agency. 'Stock' under describes the vast potential of industrial sites as materially, technologically, and architecturally fertile ground. An expanded notion of stock prompts the emergence of new figures in the city of industrial abandonment and decline.

This is the story of the material monks, who, garbed in the protective cloaks of their foundry, take back their material agency to mine cities of rust, combing through the dross around them. They come from a world of quotidian obsolescence, but they bring with them a new assessment of stock. Their resistance materializes in a set of machine hacks, and by taking stock of the tools of their foundry and the materials that surround them, the monks construct their monastery. With each hack they devise, the monks transform a kind of building waste into a kind of building material.

But they are troubled, by the scale of the undertaking, and the impossibility of completely taking stock, for nothing can escape the scrutiny of their attention or the scope of their salvages. They must accept that their work will never finish, and like Sisyphus, must hack and re-hack, endlessly recycling material and technology. They can never escape the furnace that will melt down their machine parts, or the hopper that takes and redistributes their crushed and dismantled assemblies.

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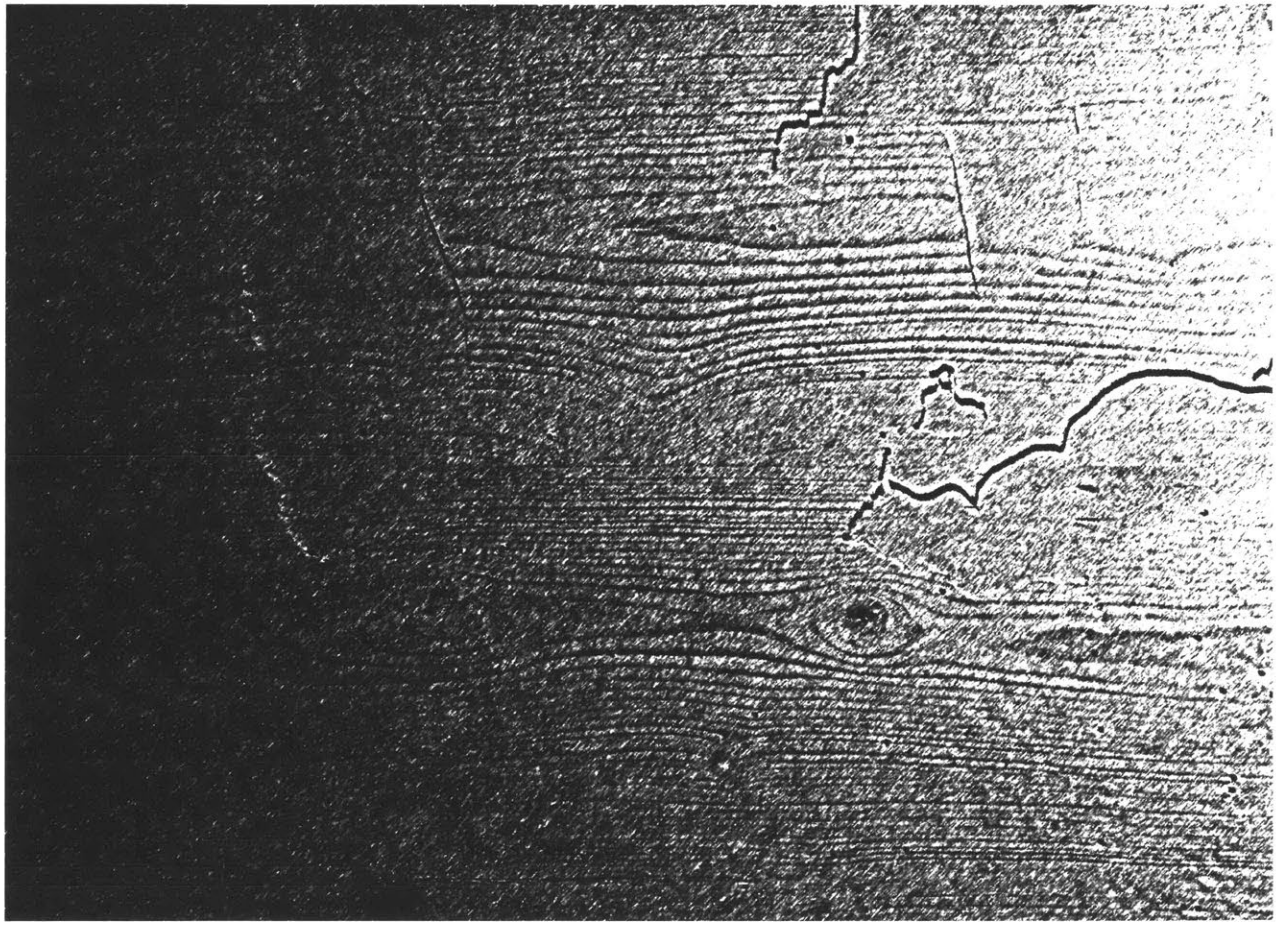
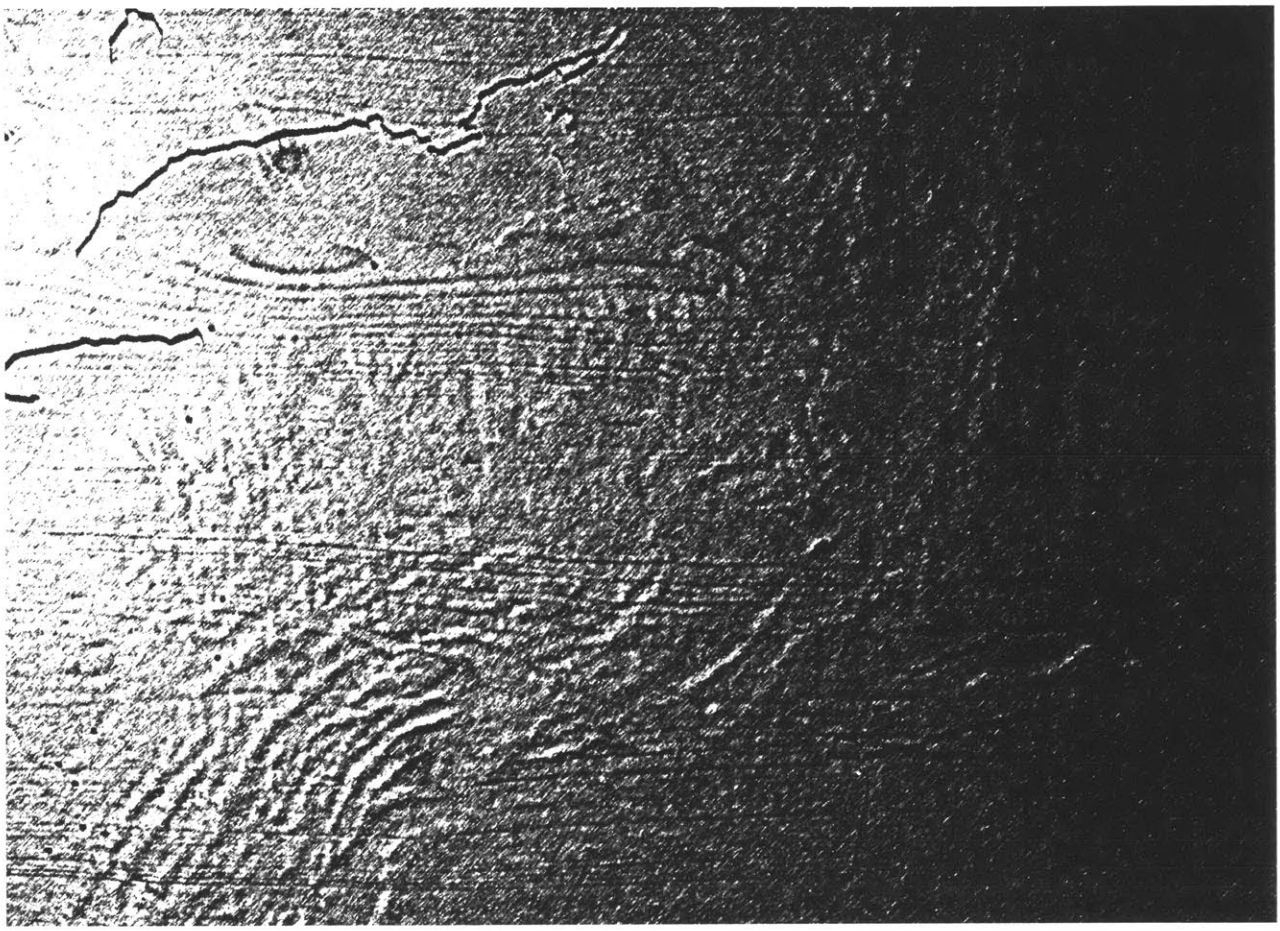
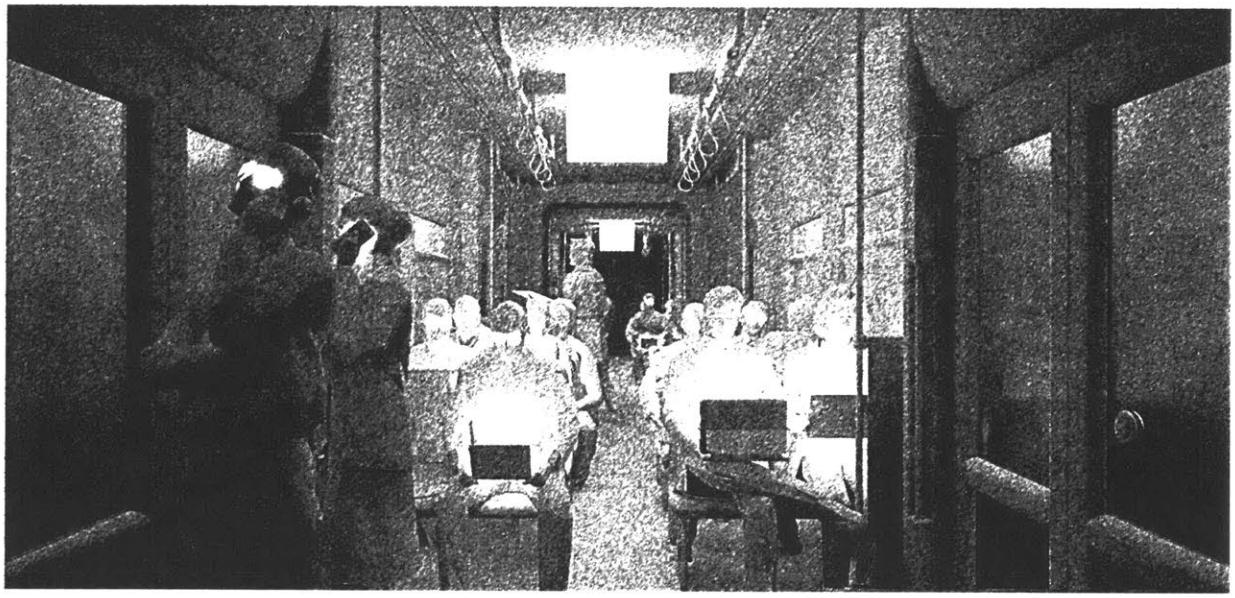
Natalie
Iggy
Frankie
Ellen
Nicole

I couldn't have done it without your help.
Thank you.



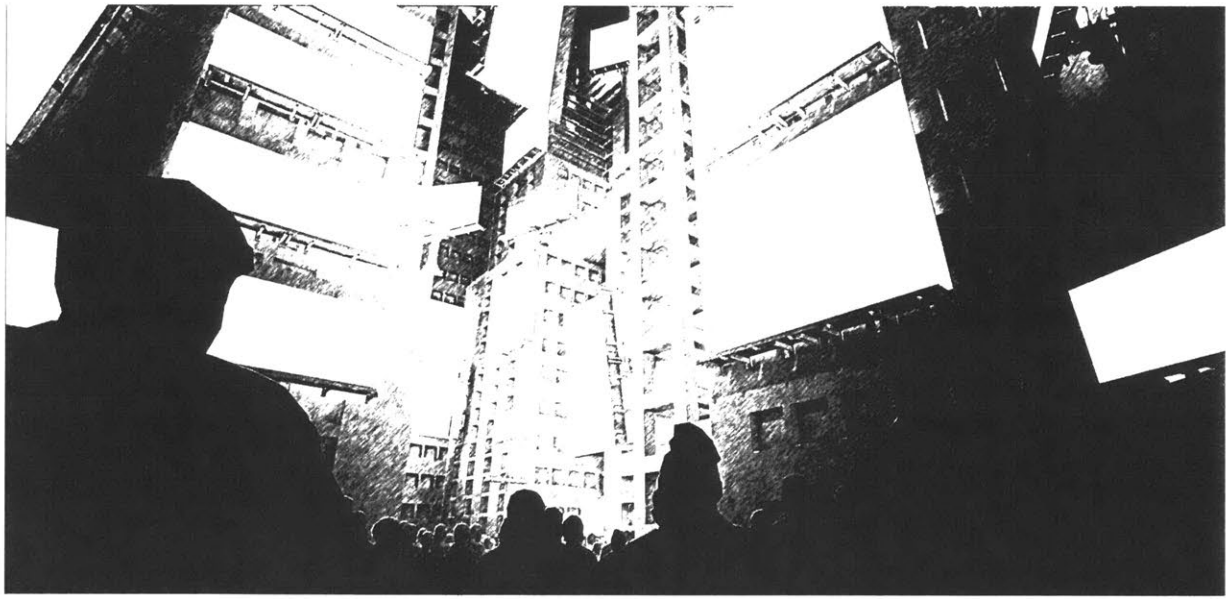


By a very slow and stealthy process have we been absorbed into this digital age. The story begins in this uncertain yet familiar time.



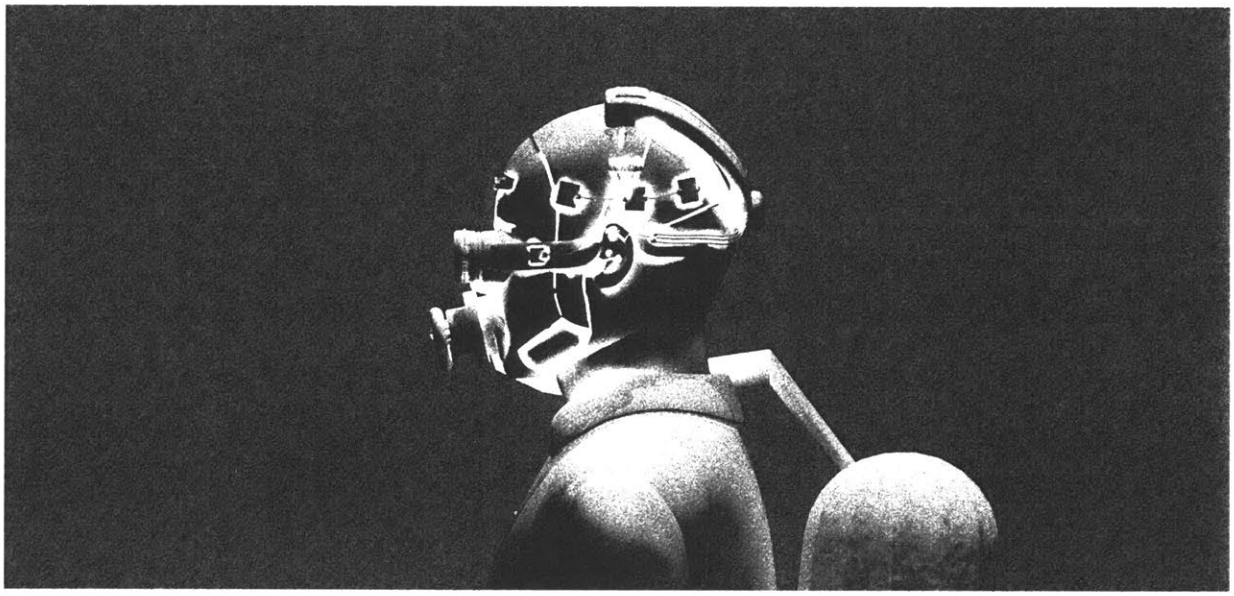
We were hacked by a digital presence that began to pervade our lives. What was material had become immaterial, or so it seemed. Our connection online was what mattered most to us.

Our cities changed as we craved nothing more than the beauty of images reflected brightly on impossibly thin screens.

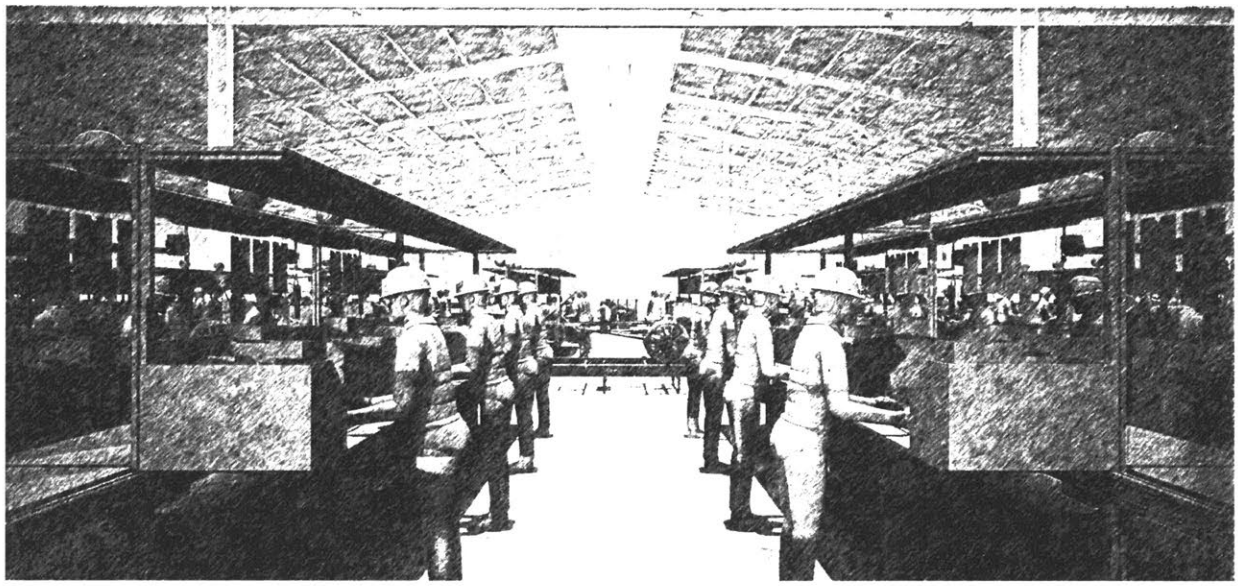


The digital realm had become so immersive, it allowed us to leave our world altogether, and enter the images we gathered so assiduously. And so we forgot what material meant, ever drawn to the more perfect simulations the digital world provided.

So absorbed were we that eventually, our bodies were hacked, and our environment, modulated within our own minds. The world became foreign to us, for technology ensured our comforts. All we needed to do was comply.

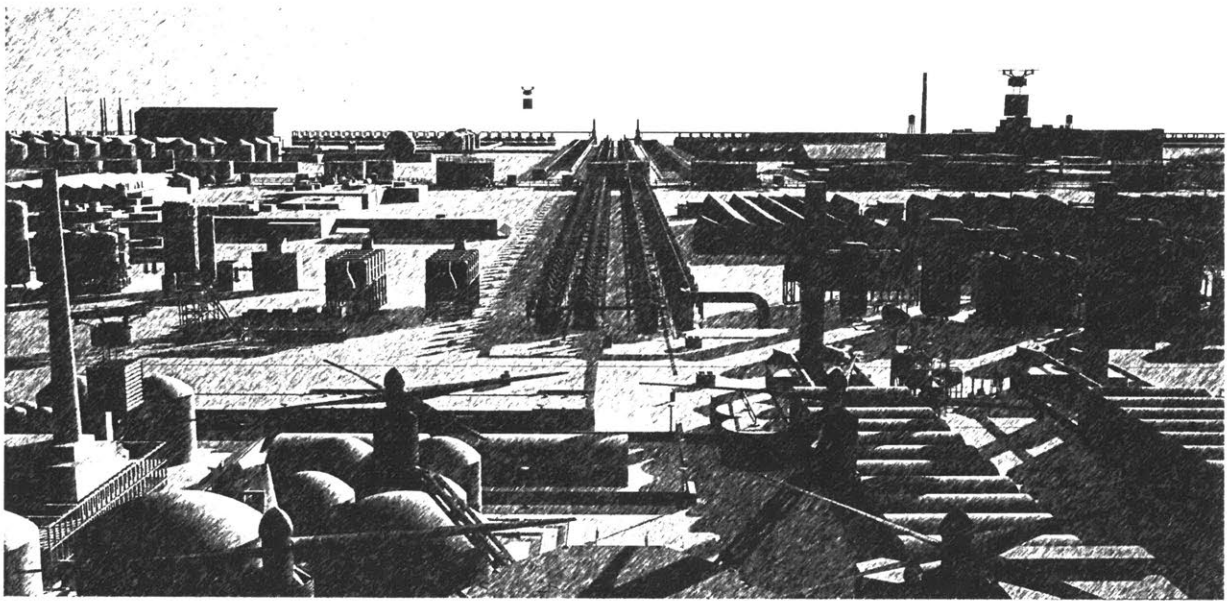


Our workplaces were the first to be hacked. We were freed from our labour, no longer tied to our stations, working with and as machines. We witnessed the end of an age of Taylorist submission.



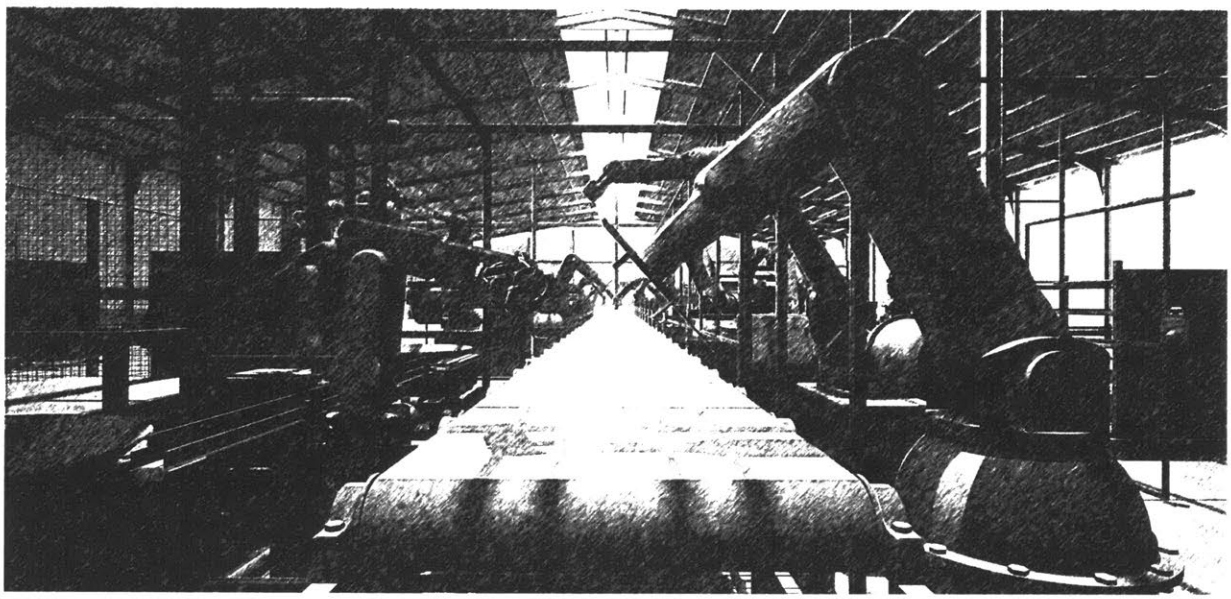
And in exchange, the objects of our dreams appeared before us. Hidden landscapes of black box factories ceaselessly produced these artifacts, and fleets of drones delivered them to our doorstep.

And so we forgot how things were made, and how to make things. Our connection to material was hacked, and we deferred to the efficiency of automated digital production.

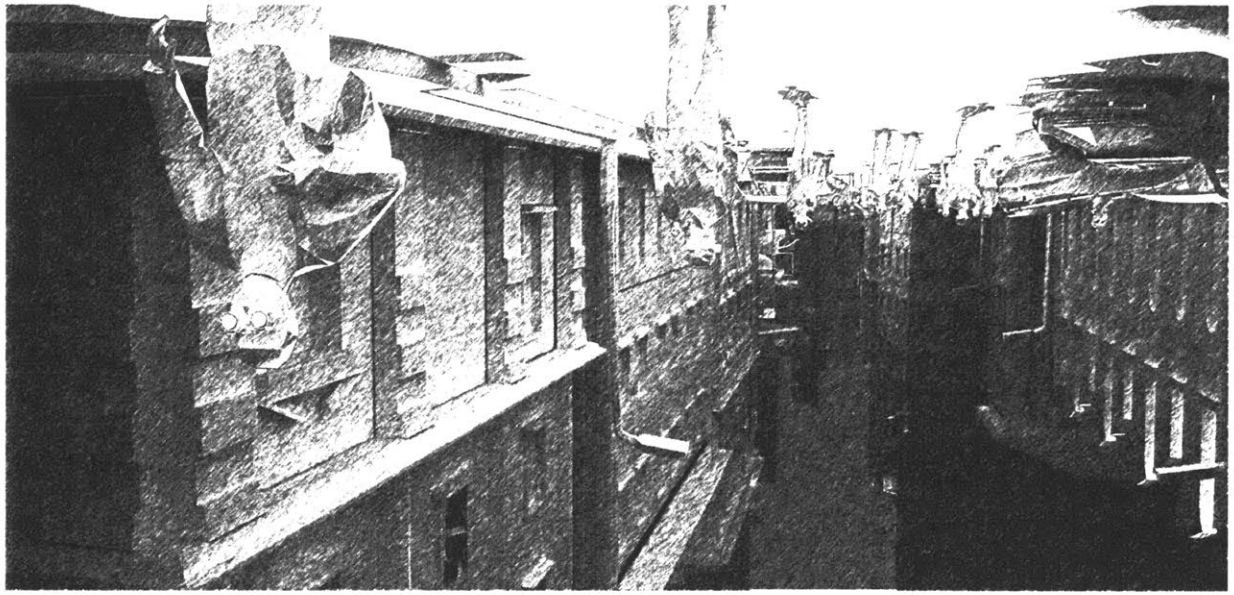


Assembly lines transformed from workstations to autonomous cells, strung together by endless conveyors. Outsourced and outmatched, the machines began to replace us.

Our manufacturing centers fell into ruin and became wasteland. Out of sight and out of mind, no one dared venture through these toxic sites.

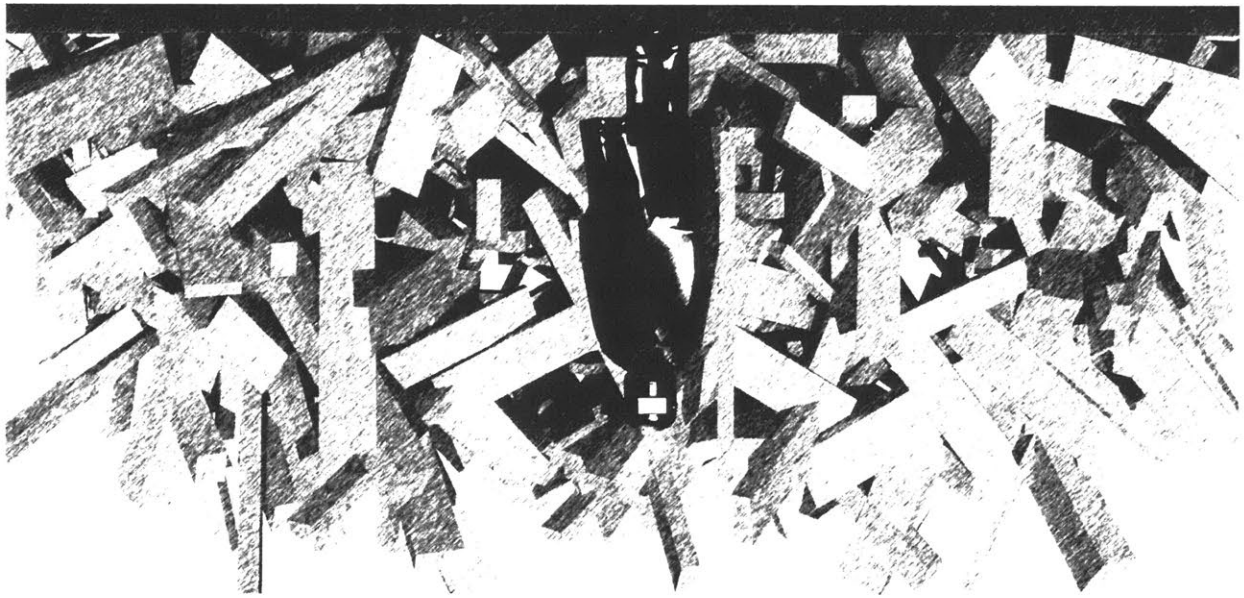


All we could do now, was take comfort in digital simulation, glued to our goggles that held us transfixed. In this digital reality, we abandoned our material lives, and so we wander from place to place. No longer tied to a physical reality, we find solace in continuous movement through our simulated environments. And our cities fell to rust, irrelevant to us in our path through the digital world.

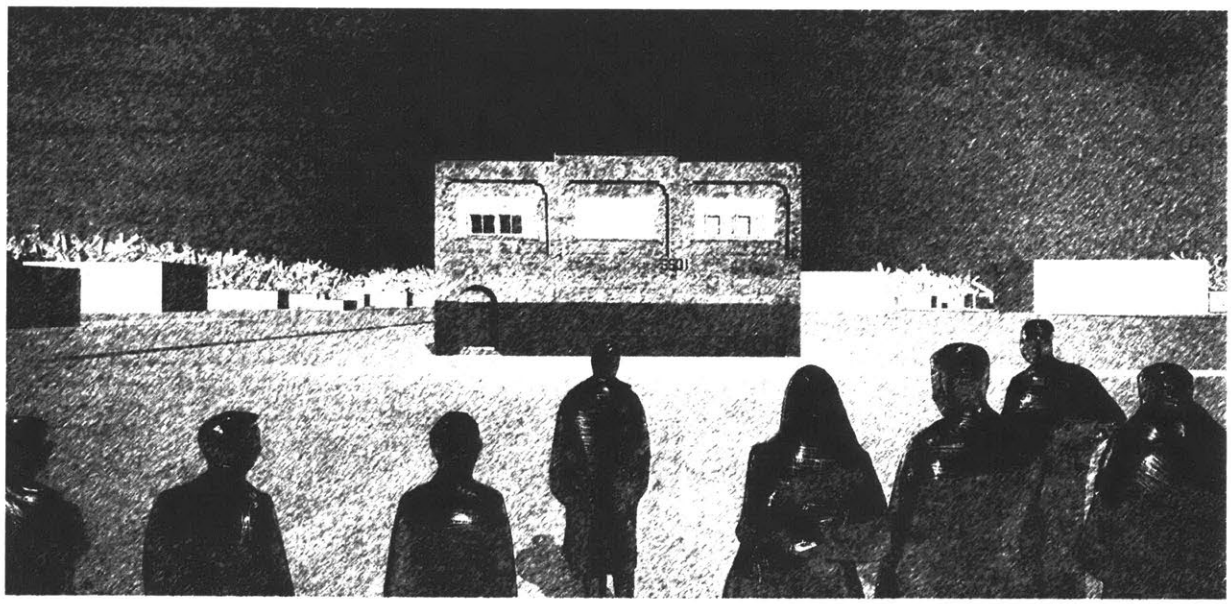


And as our cities began to empty and erode, with massive populations engaged in an exodus, the dross began to pile up around us. Out of these forgotten urban landscapes of outmoded machines and materials, emerges a resistance, that watches silently over hypnotized crowds, and starts to pick up the pieces.

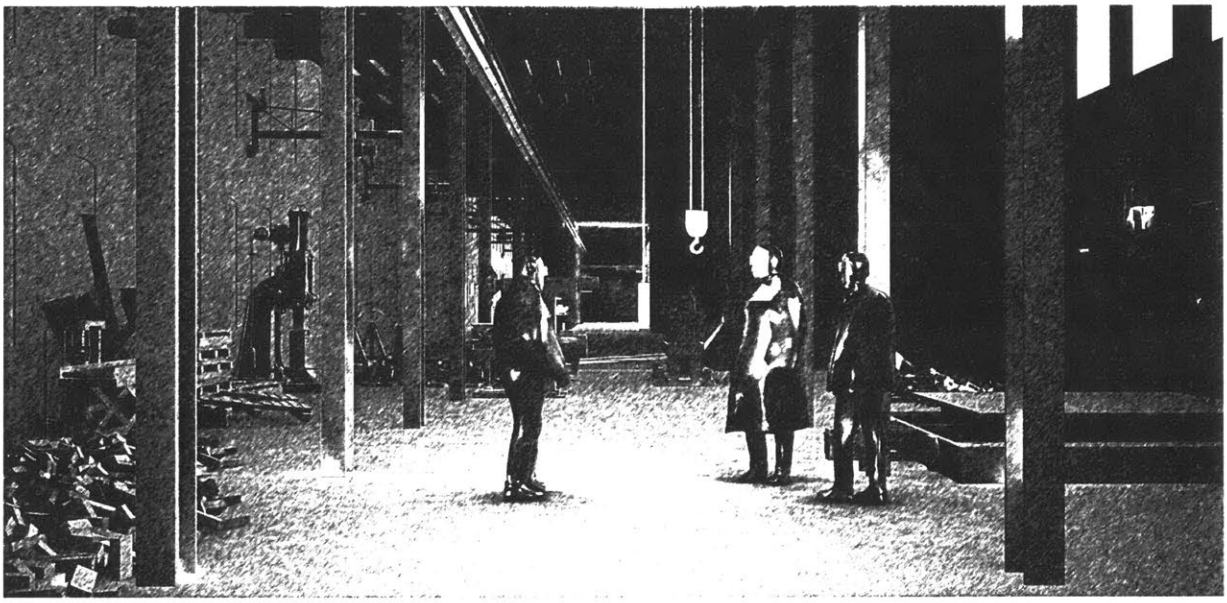
This is the story of the material monks, who, garbed in the protective cloaks of their foundry, take back their material agency to mine the vast potential of the post industrial sites around them. They come from a world of quotidian obsolescence, but they bring with them a new assessment of stock.



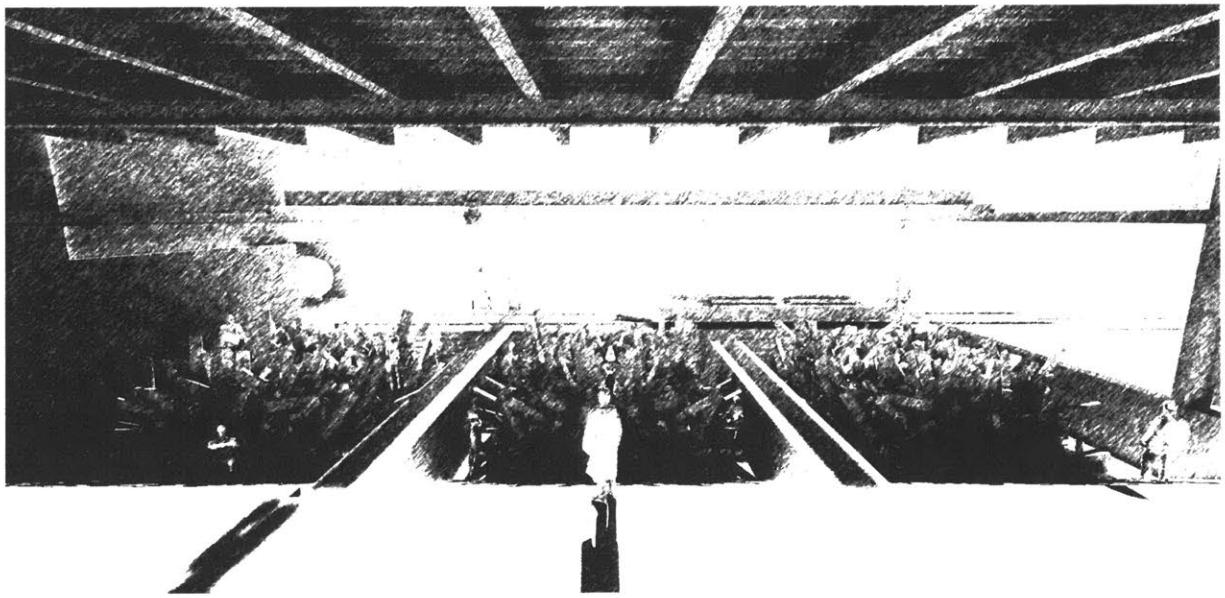
The site of their resistance is the old Aerocar Company turned foundry at 6501 Mack Ave. The monks take over a condition of abandonment, in an attempt to take back control of their own material agency.



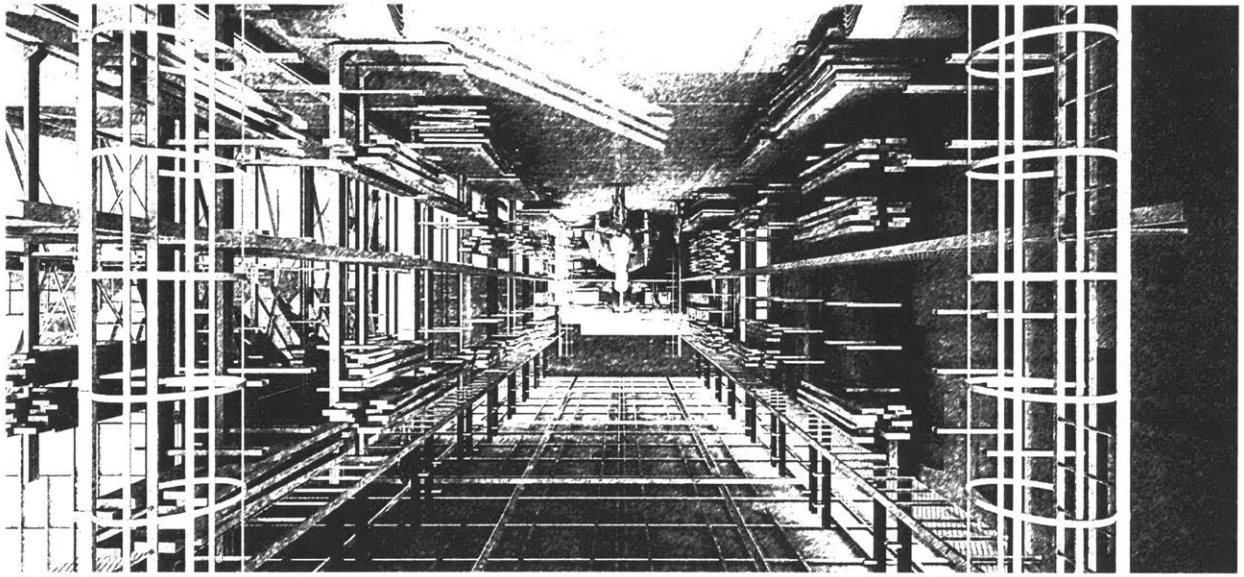
Their resistance materializes in a set of machine hacks, and by taking stock of the tools of their foundry and the material that surround them, the monks build their monastery. They brought with them no prejudice to their parts, hacking apart to construct anew.



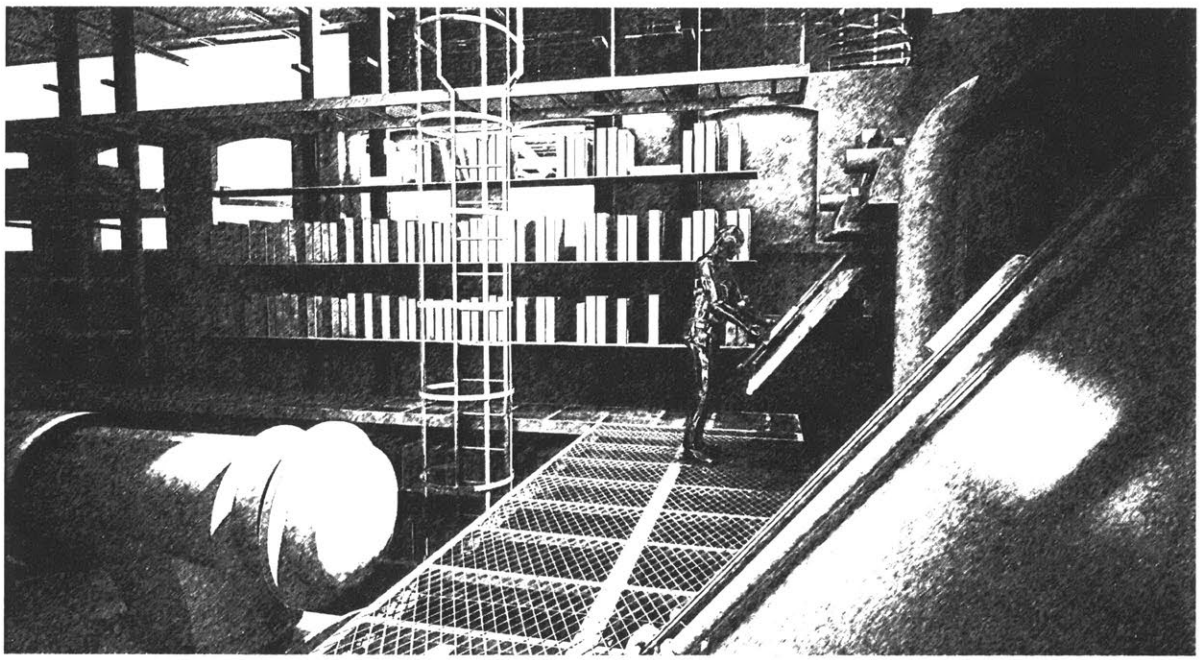
The day begins with material salvage. An excavator strapped to a gantry crane moves waste through the bays as the monks comb through the dross.



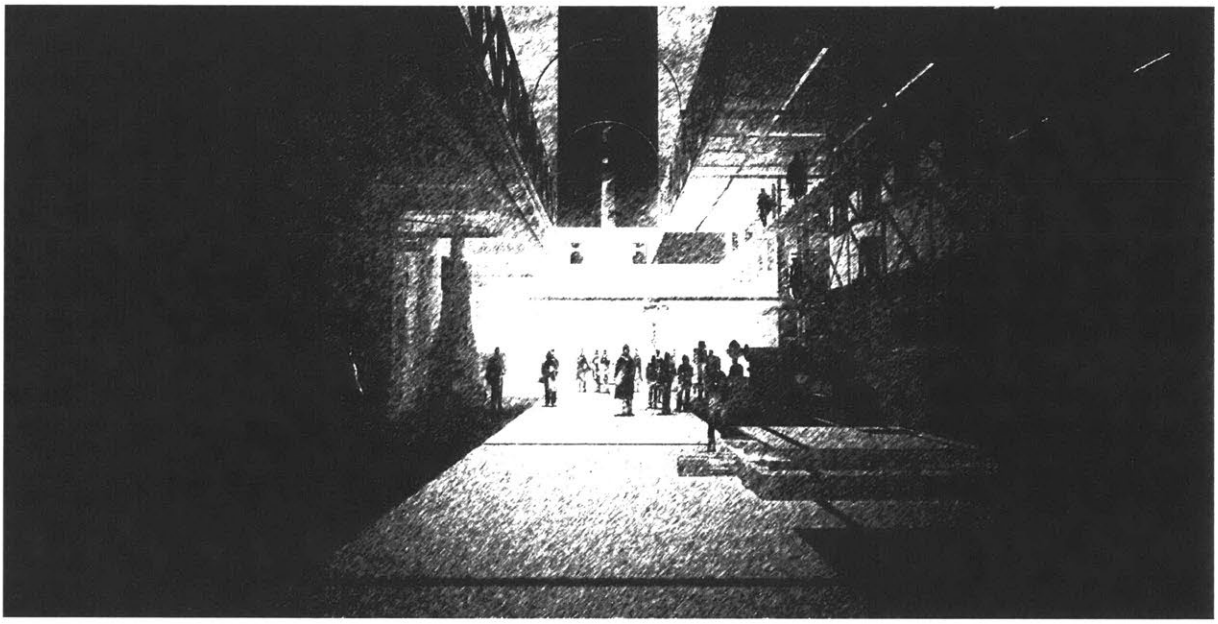
Material is meticulously sorted before being stored in the library, a continuously changing archive of material artifacts. A scriptorium sits at the end of the space where the monks record the day's salvage and devise their hacks.



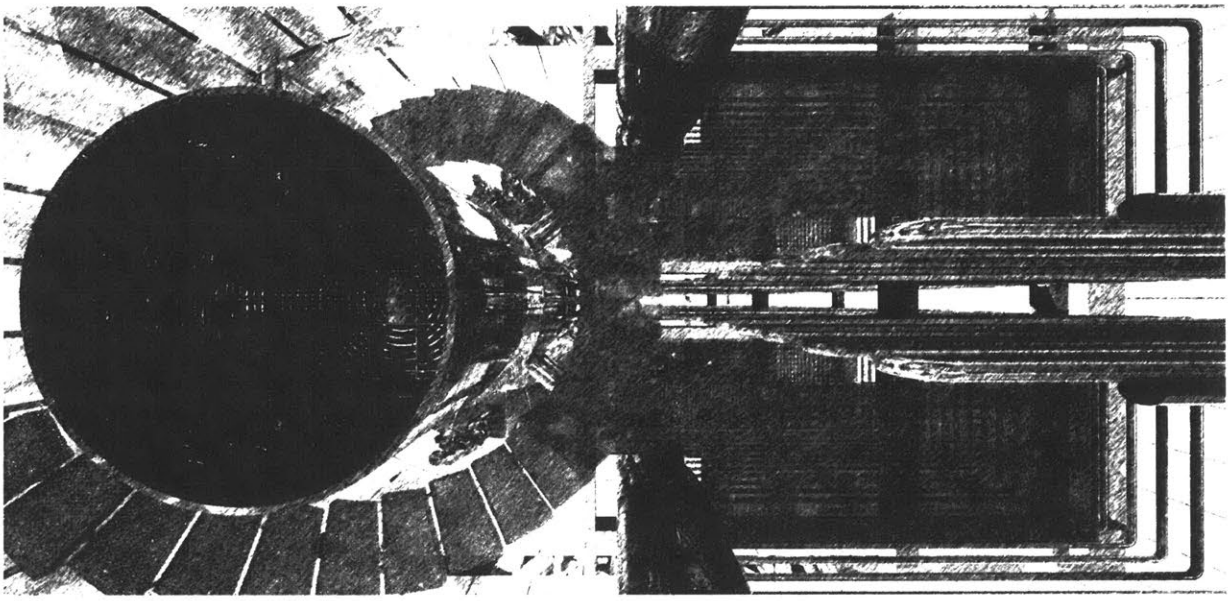
The tools of the monastery are in a constant state of change, being hacked and rehacked, the monks are charged with recording their work, producing a new kind of knowledge about obsolete machines.



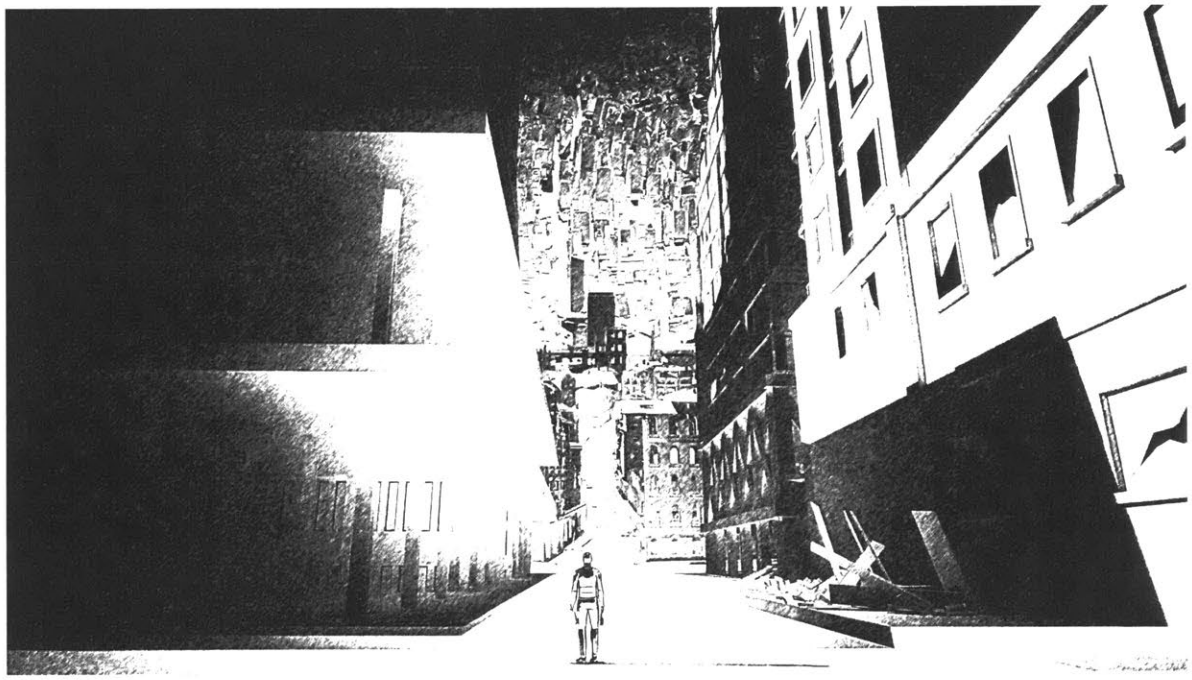
One of the most sacred spaces of the monastery is the old machine hall, where sorted material undergoes its transformation. The hall is anchored upon an induction furnace, the most intensive process the factory can support, the recycling of steel. A tower sits above, cleaning the air of the foundry.



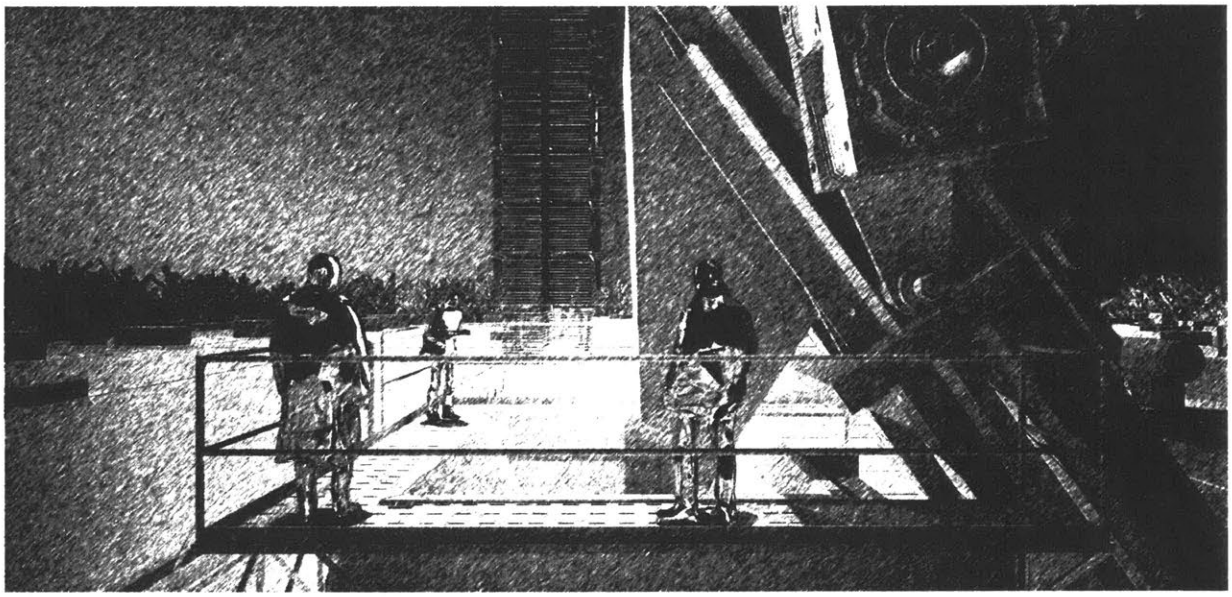
At the end of every day the monks climb round the tower to their quarters to rest, inspecting the quality of air at each level of their ascent. And they must confront the scale of their task every night when they dream of the landscapes beyond the scrubber tower they sleep in.



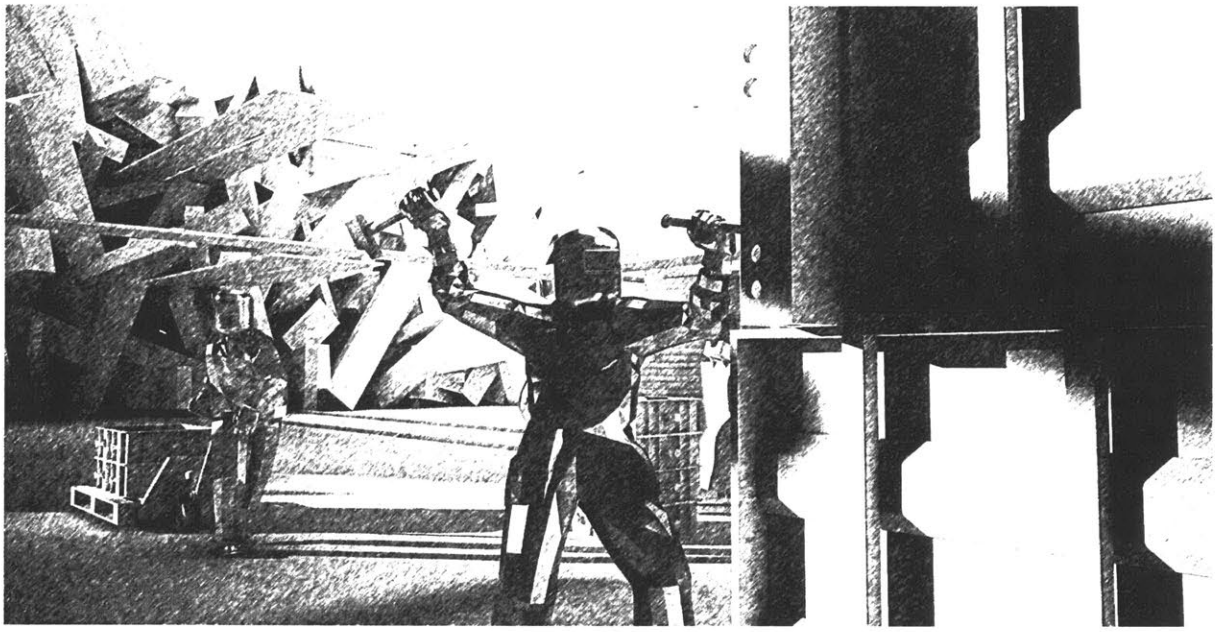
And so their dreams are troubled by the impossibility of completely taking stock, nothing can escape the scrutiny of their attention or the scope of their salvages. Their work will never finish, they must accept that they are doomed to see their work undone, and like Sisyphus, must hack and re-hack, endlessly recycling material and technology.



They can never escape the furnace that will melt down their machine parts, or the hopper that takes and redistributes their crushed and dismantled assemblies.



They will never finish taking
stock.



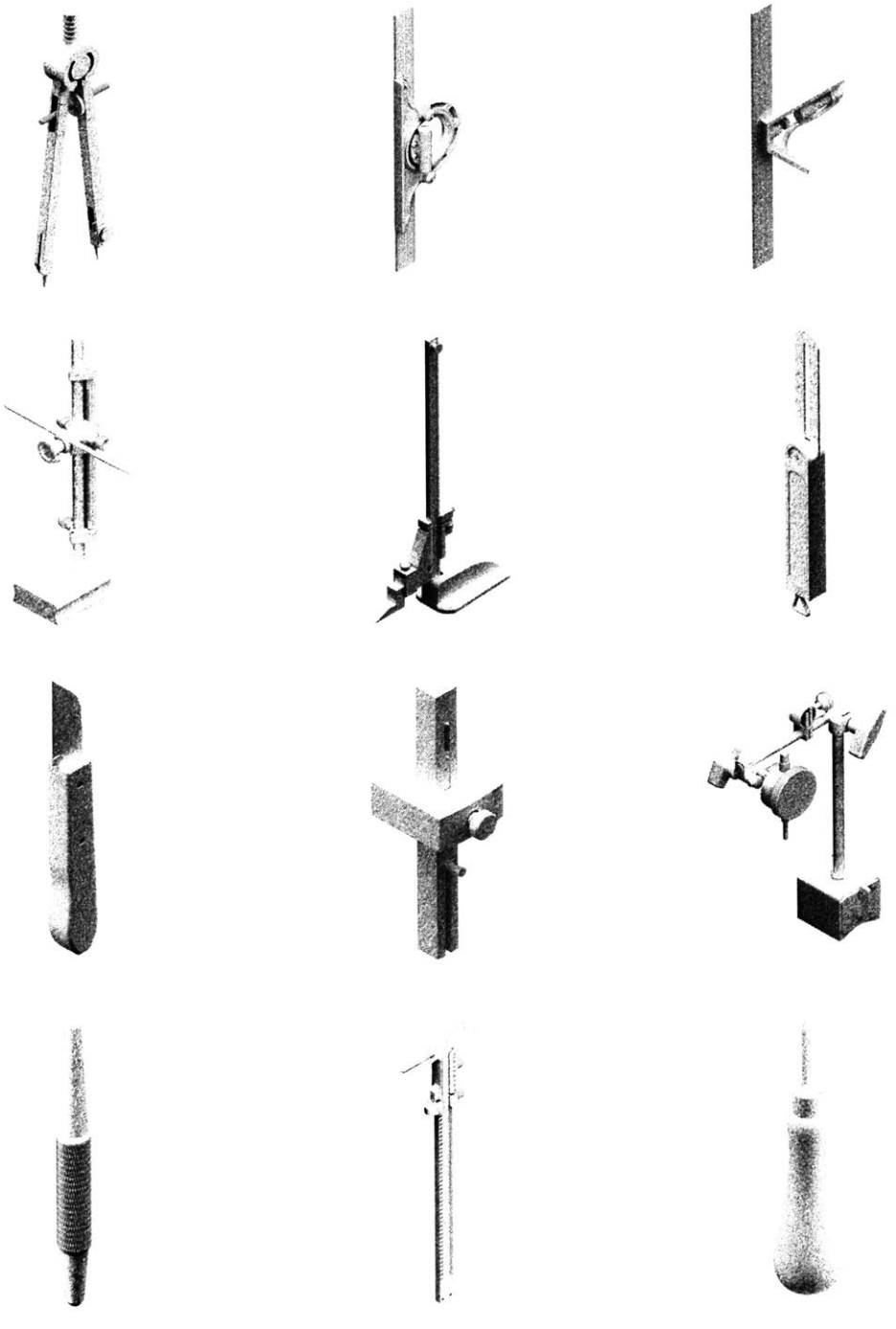
TOOL STOCK

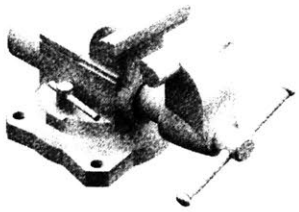
6501 MACK AVENUE

SALVAGED FOUNDRY TOOLS

ORGANIZED
BY
EFFECTING ACTION

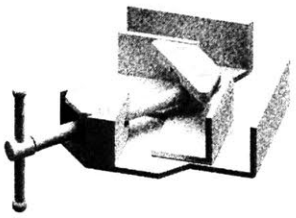
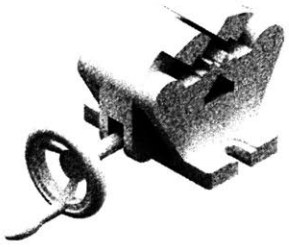
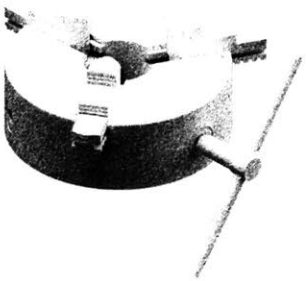
LIST OF PLATES

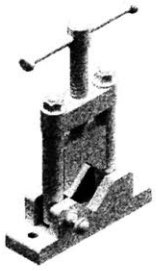


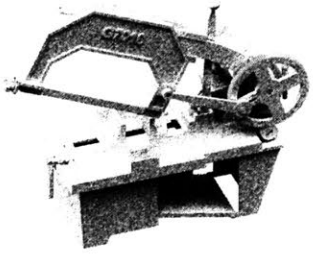


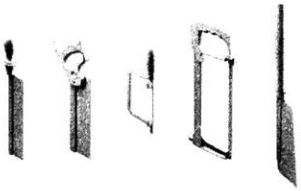


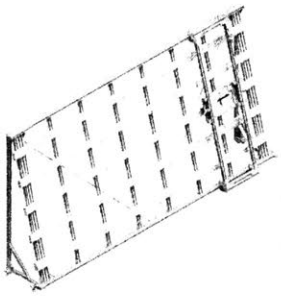
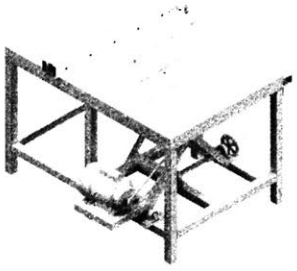
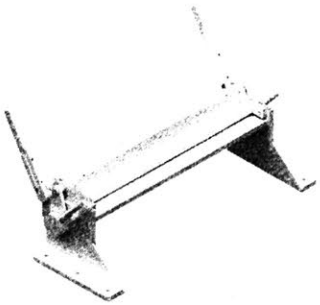


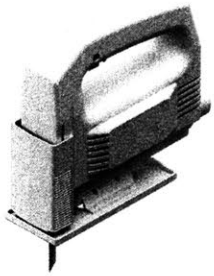
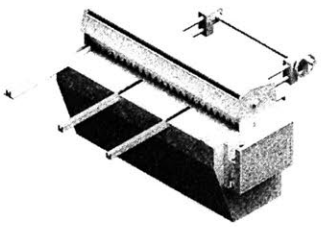
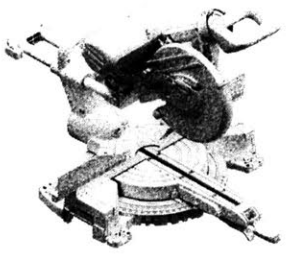





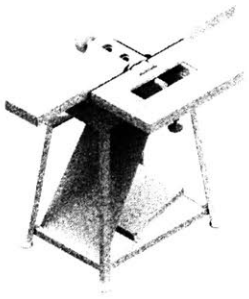
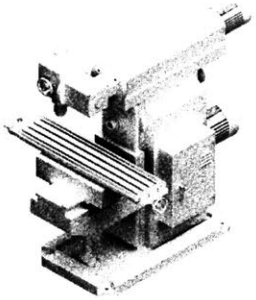
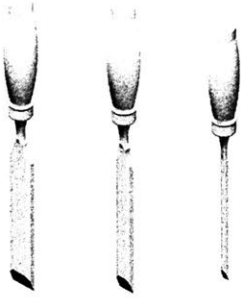


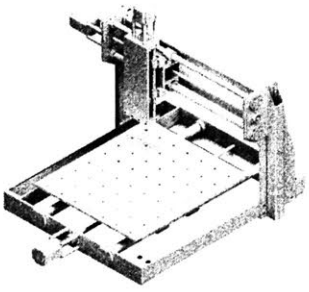


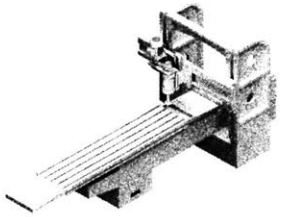
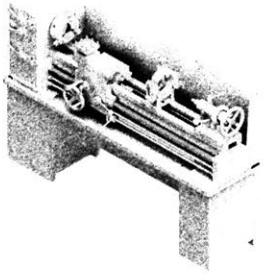


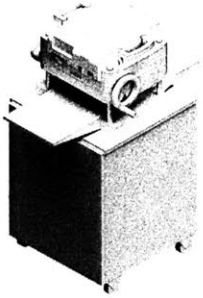




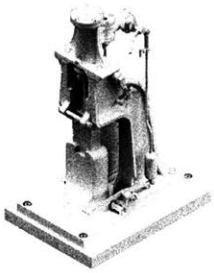
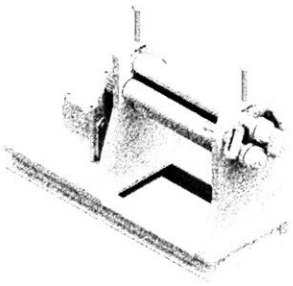
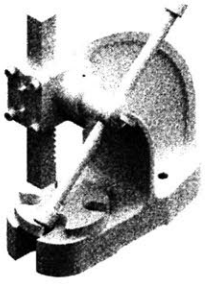




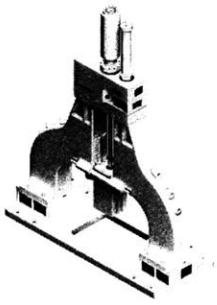
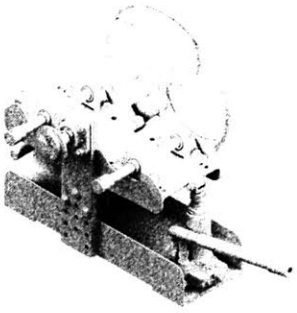



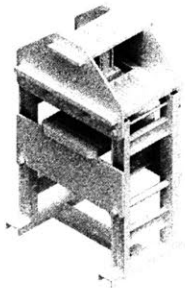
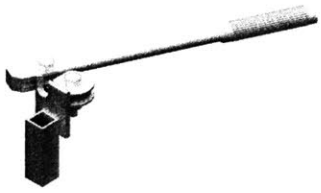
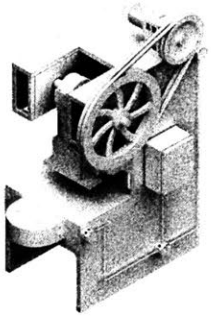



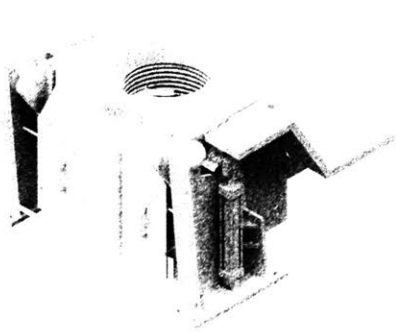


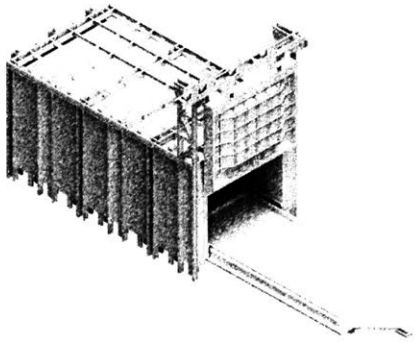


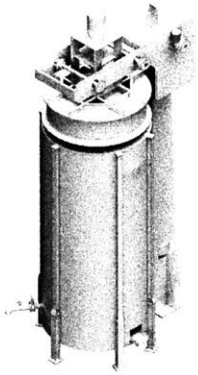




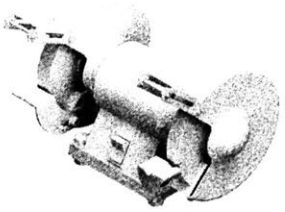




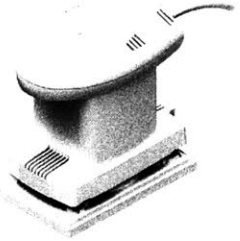
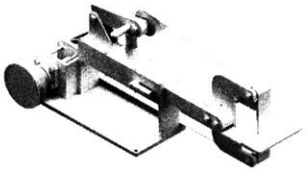






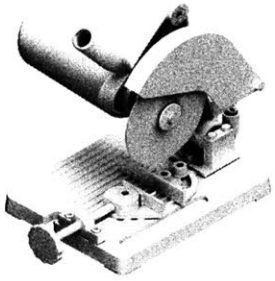
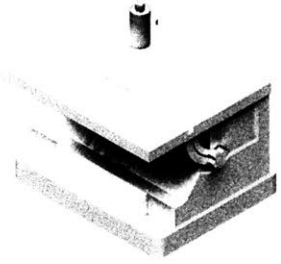
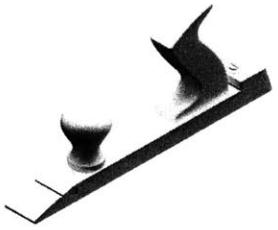


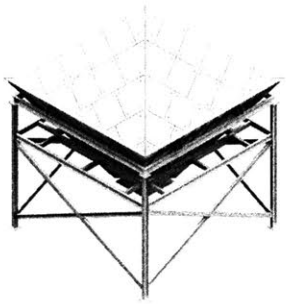
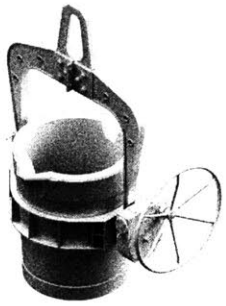


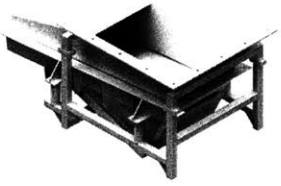
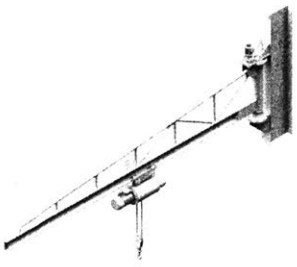
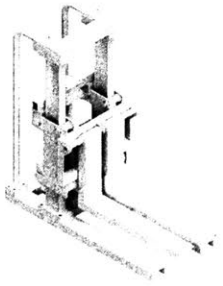



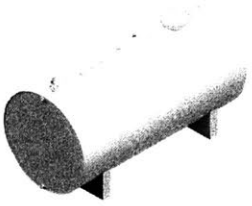
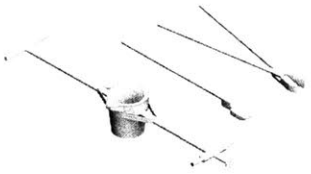
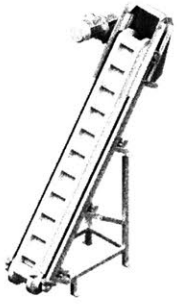
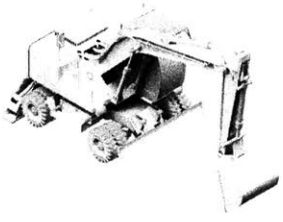
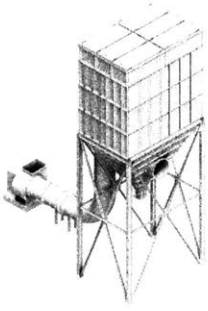






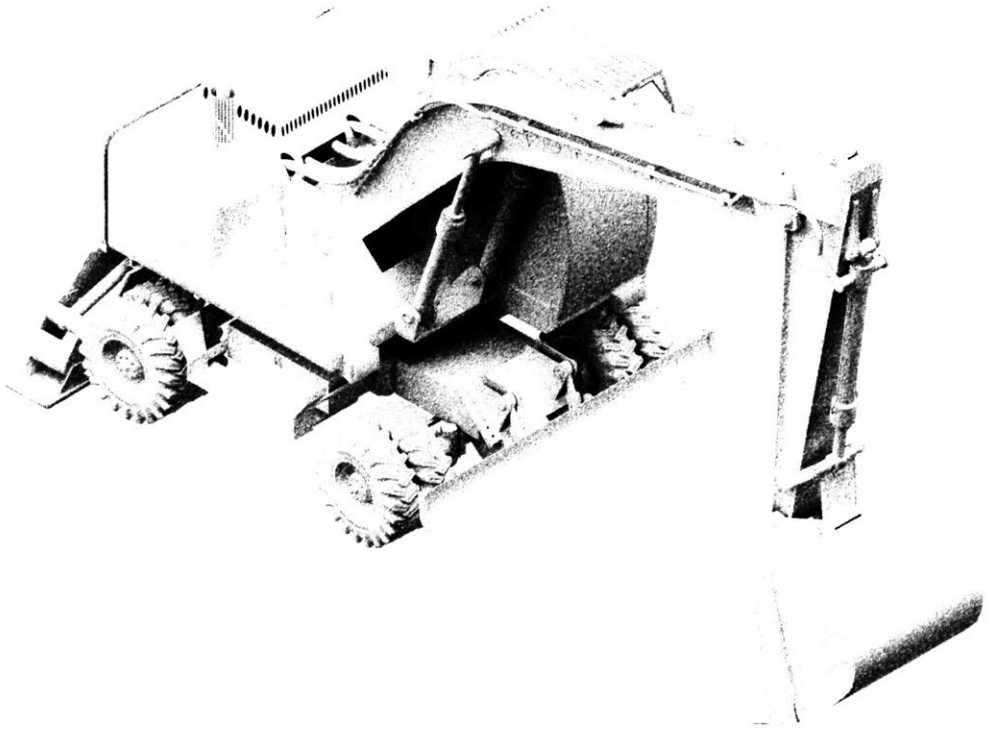
EXCAVATOR

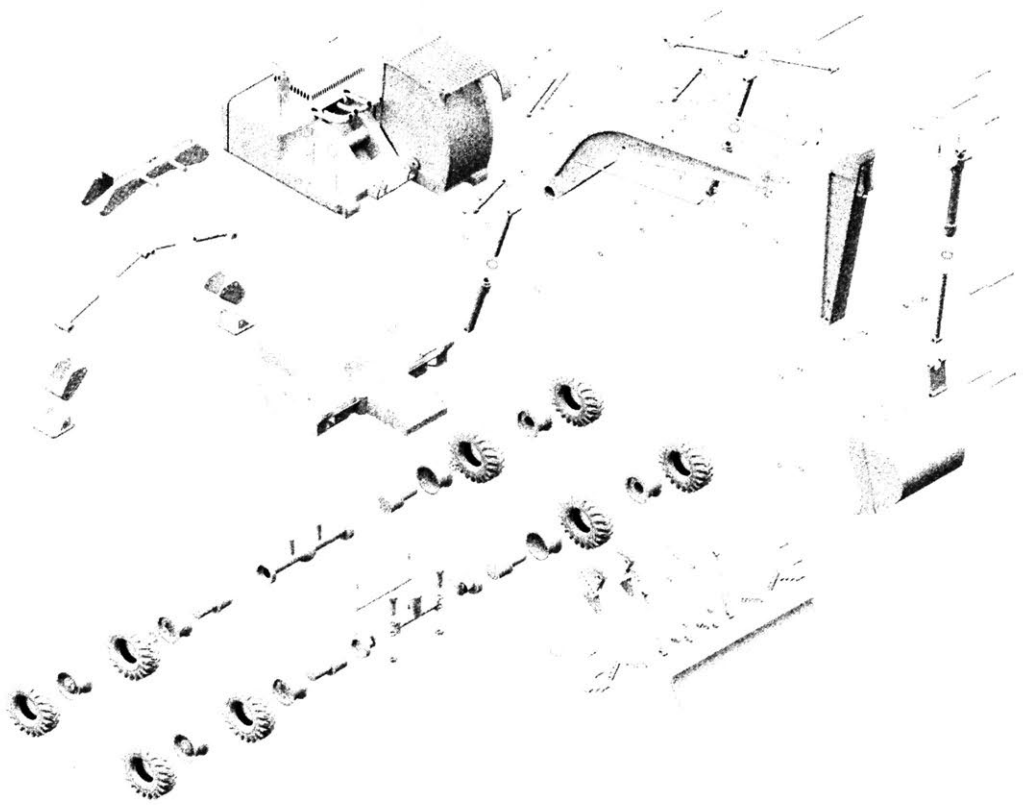
BACKHOE, GANTRY CRANE, LIFTER HACK

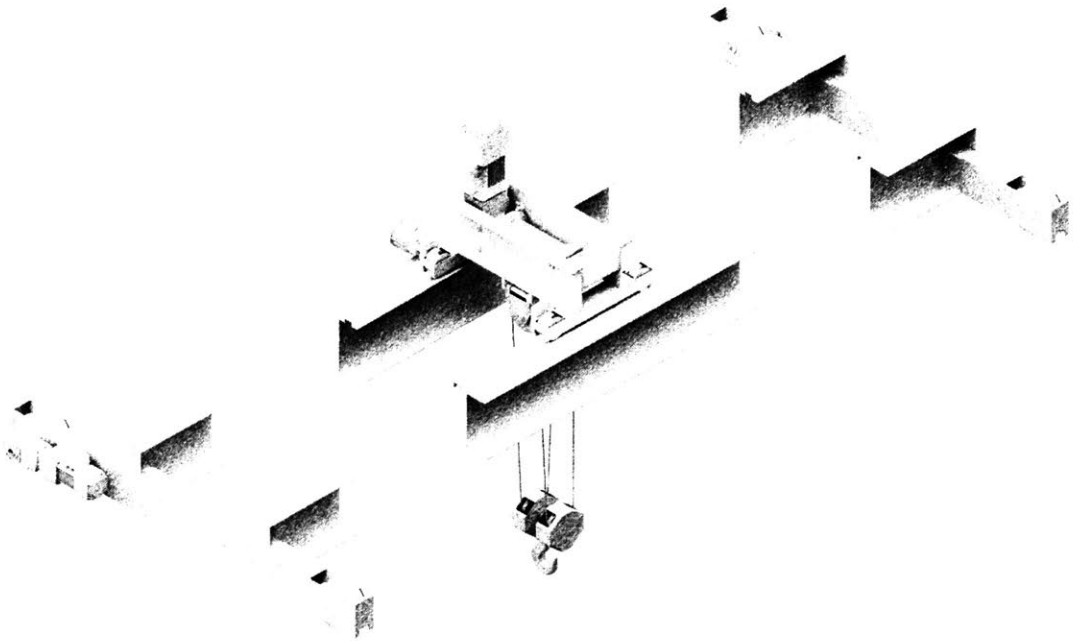
HARVESTED MECHANISMS
COMBINING
BACKHOE ROTATIONAL MOTION
GANTRY CRANE LATERAL MOTION
LIFTER VERTICAL MOTION

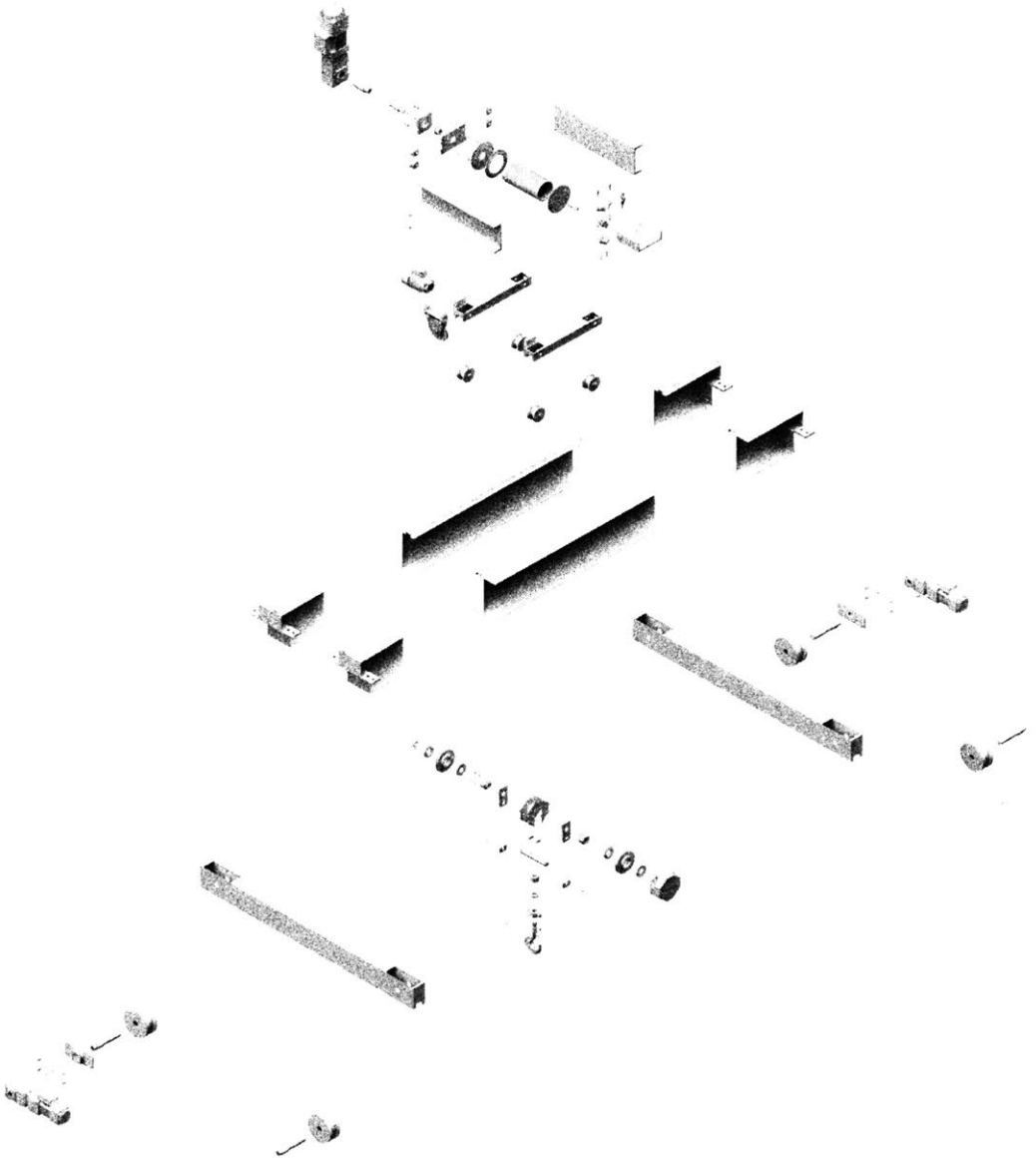
MULTI AXIS
EXCAVATOR & FRAME
FOR
MATERIAL SORTING

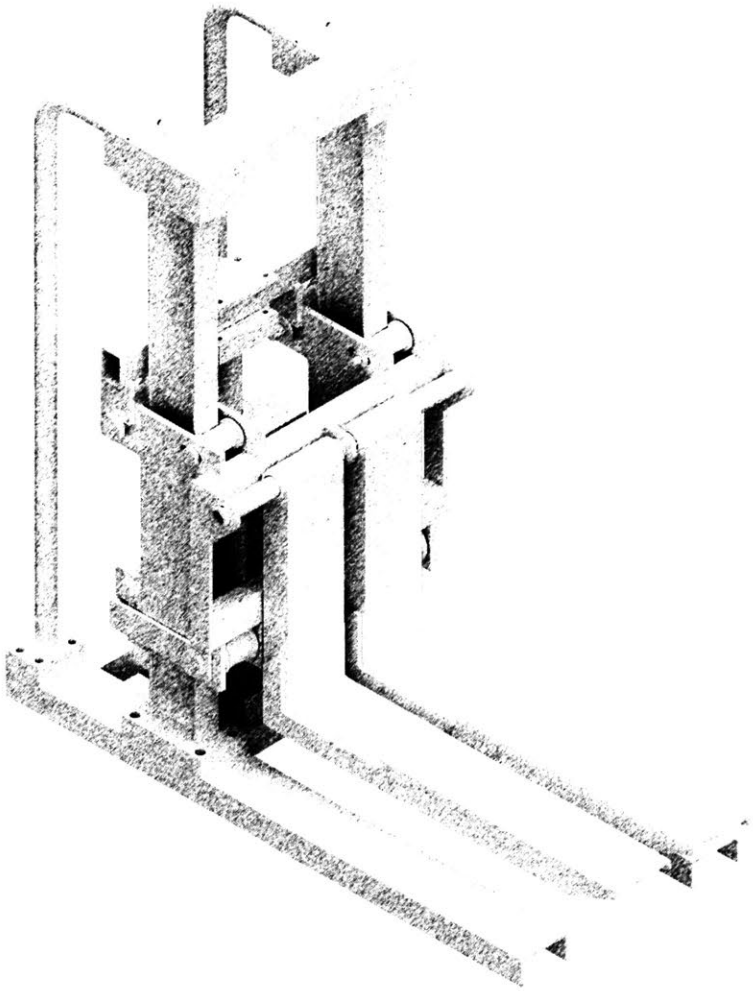
LIST OF PLATES

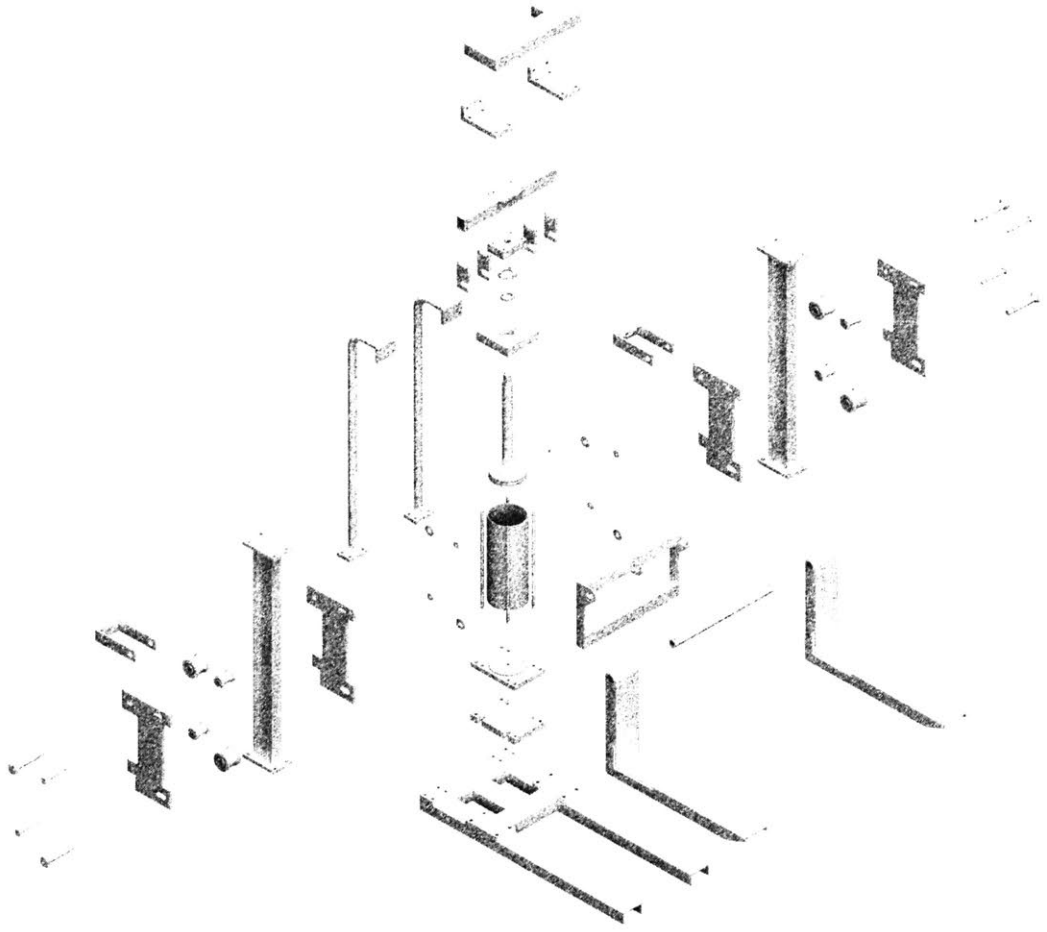


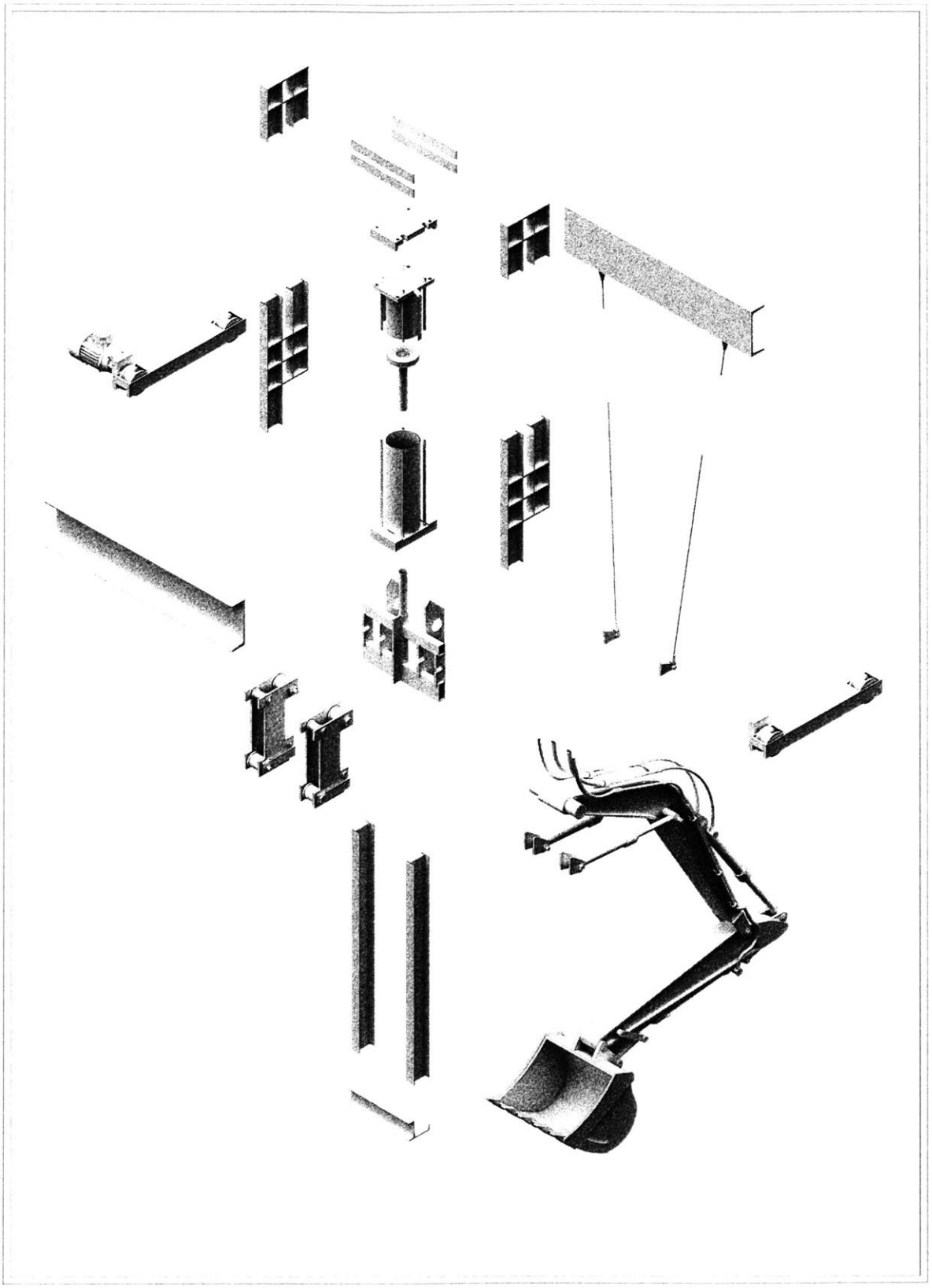


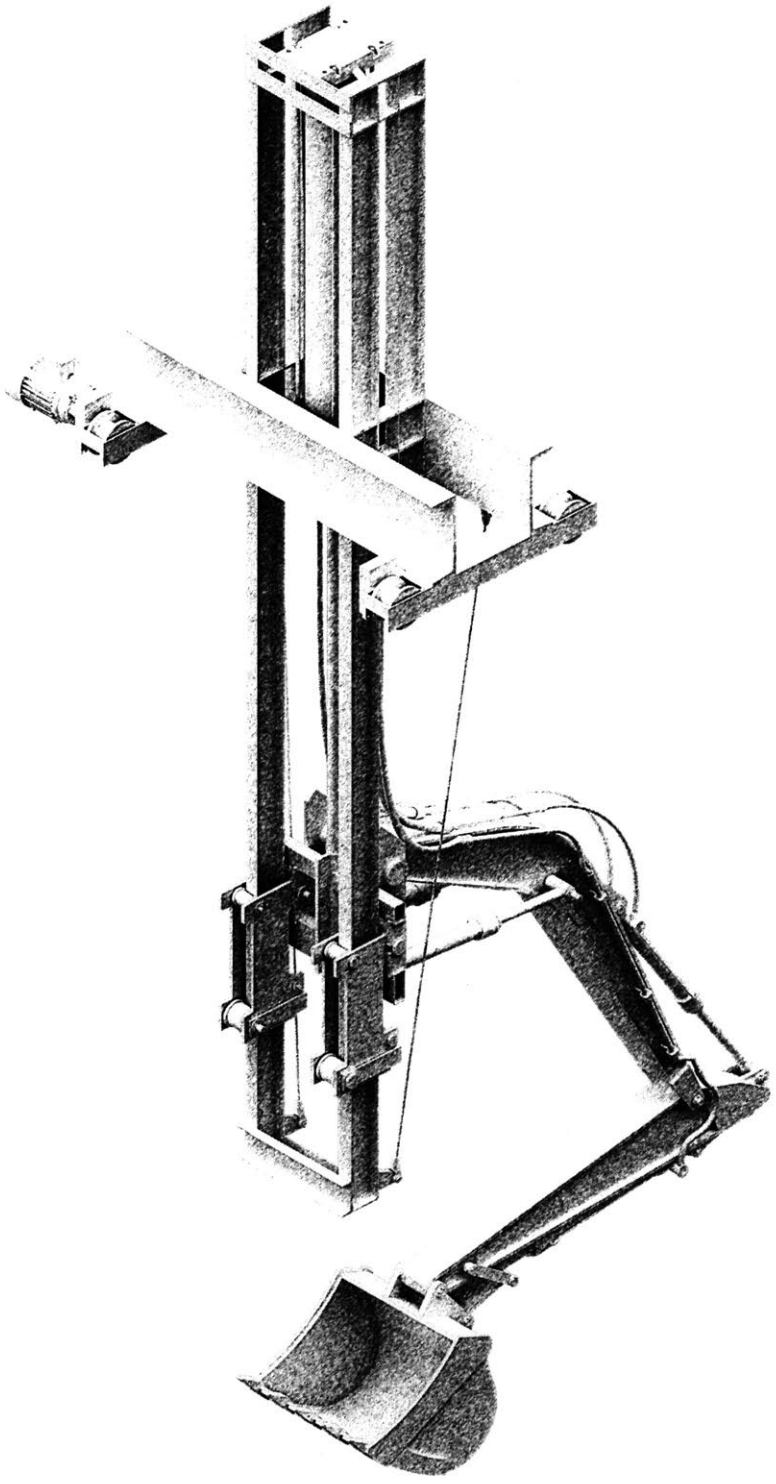












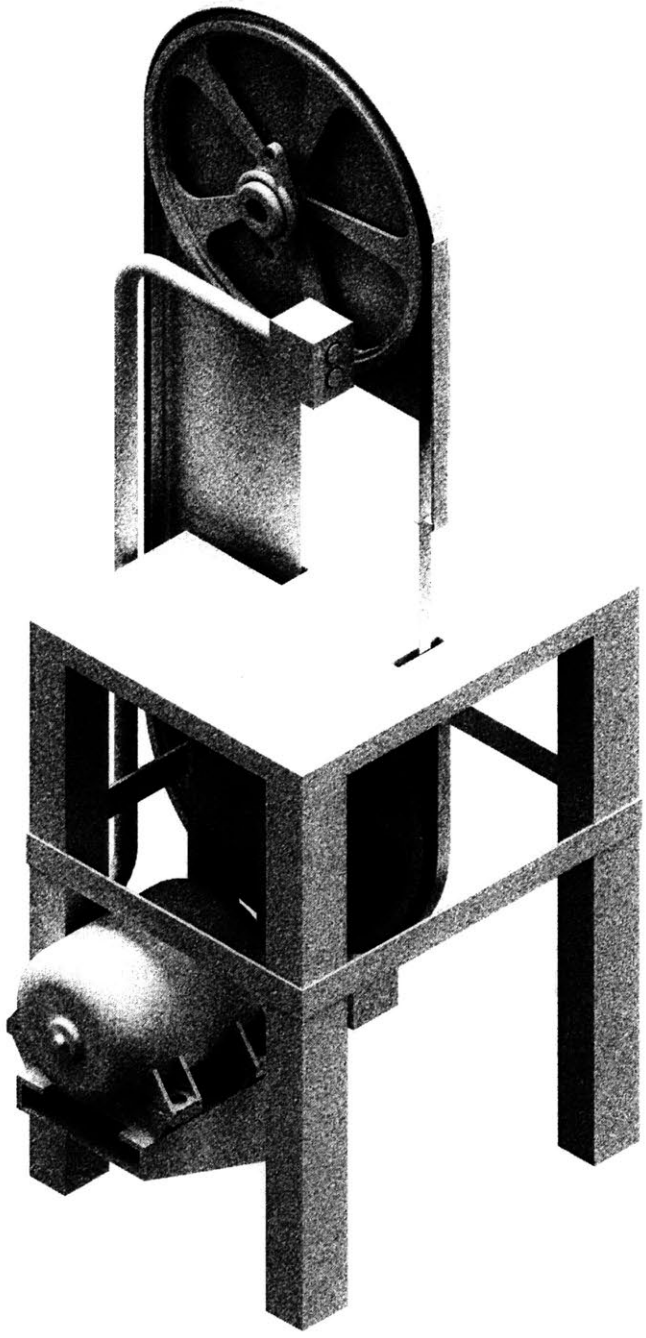
SAW

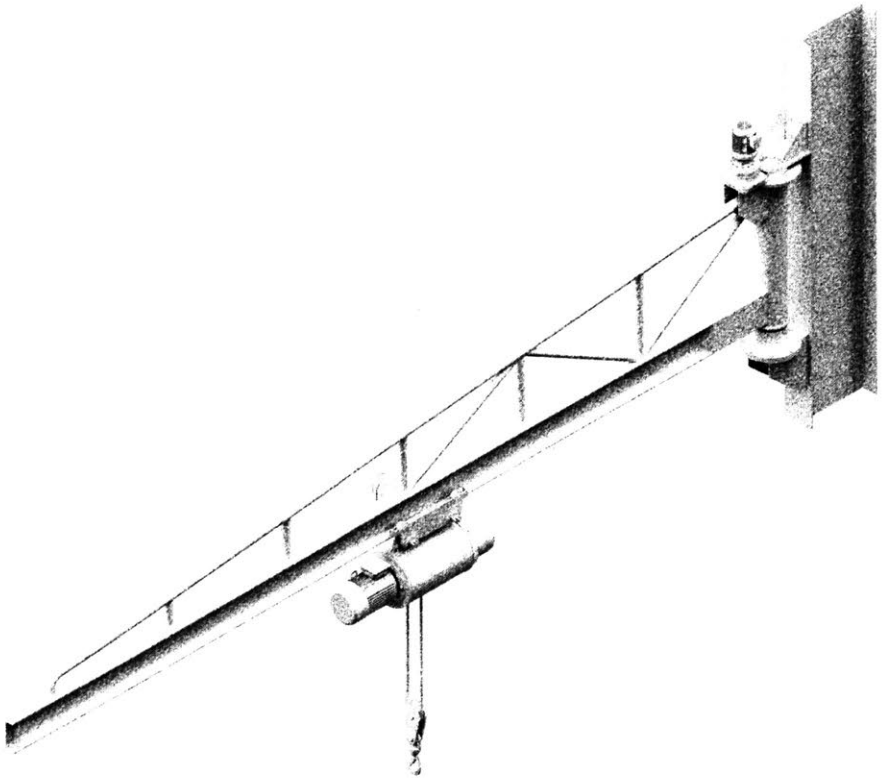
BANDSAW, SAWZALL, & CRANE HACK

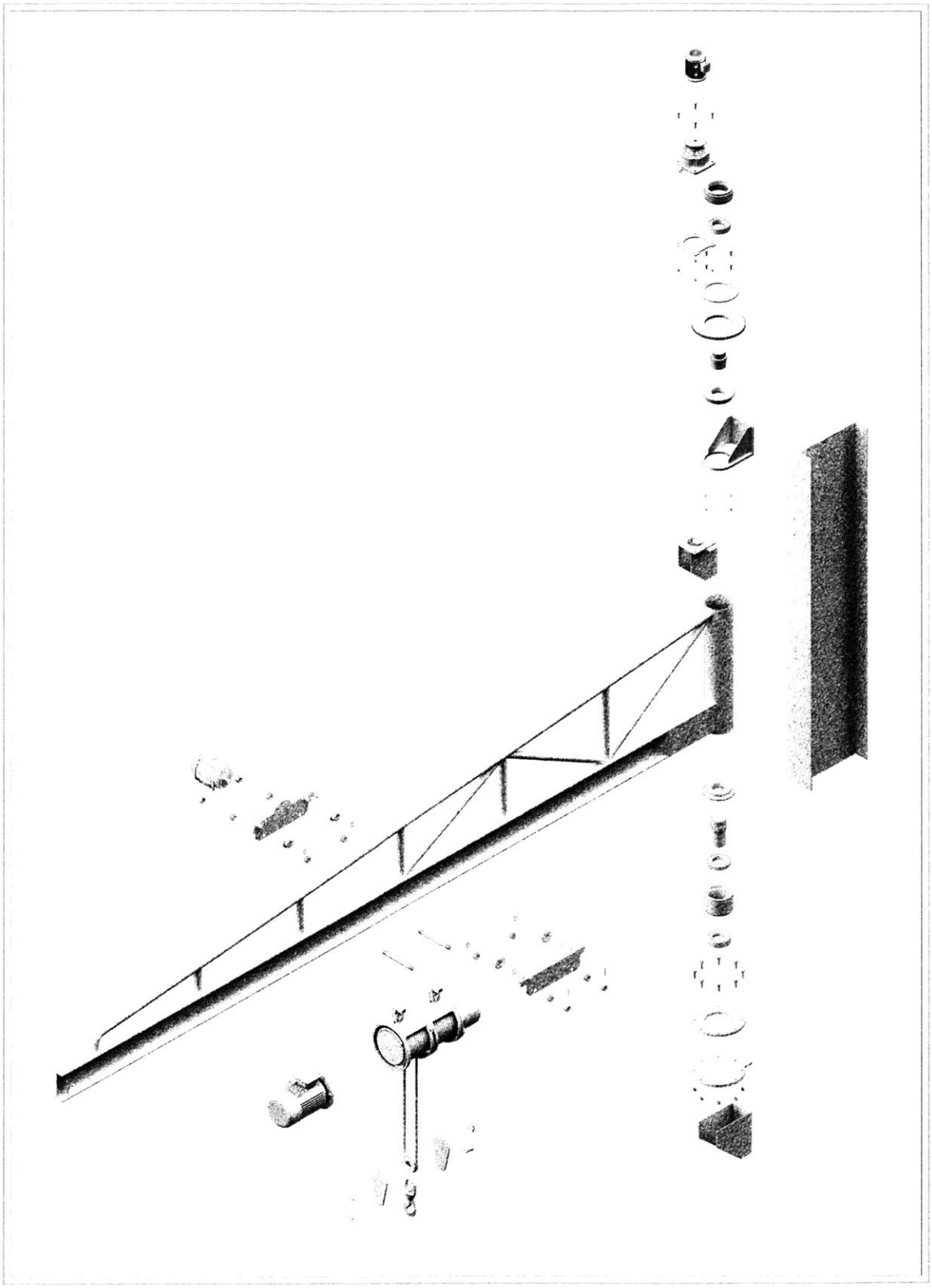
HARVESTED AND COMBINED
MACHINE PARTS
SAWZALL RECIPROCAL MOTION
BANDSAW CUTTING BLADE
JIB CRANE STRUCTURE

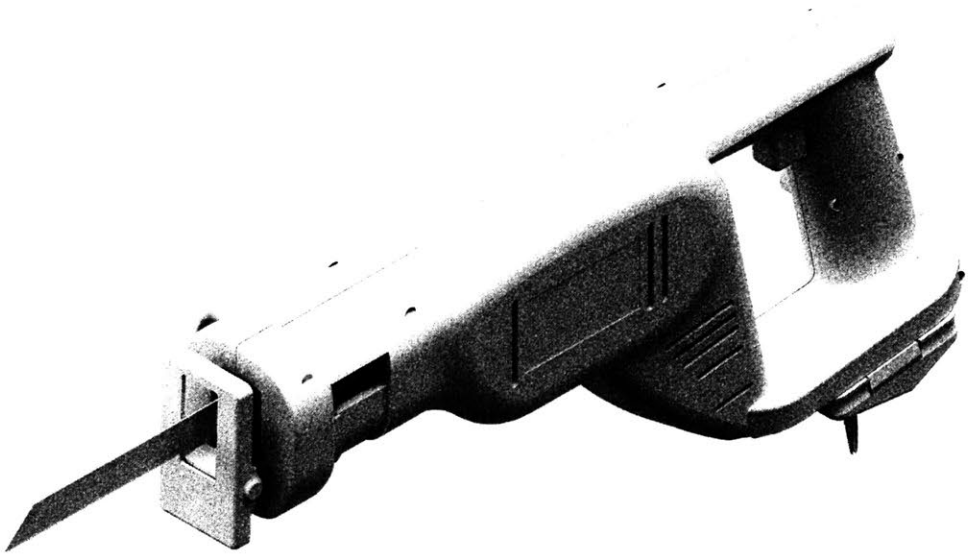
LARGE FORMAT SAW FOR CUTTING SALVAGED STEEL

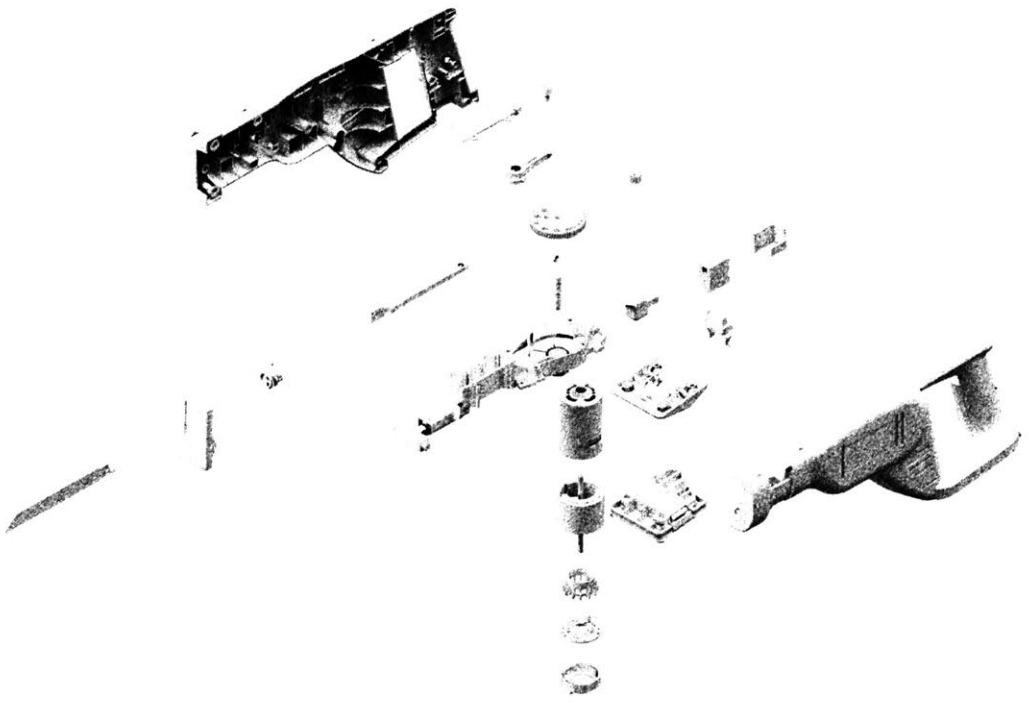
LIST OF PLATES

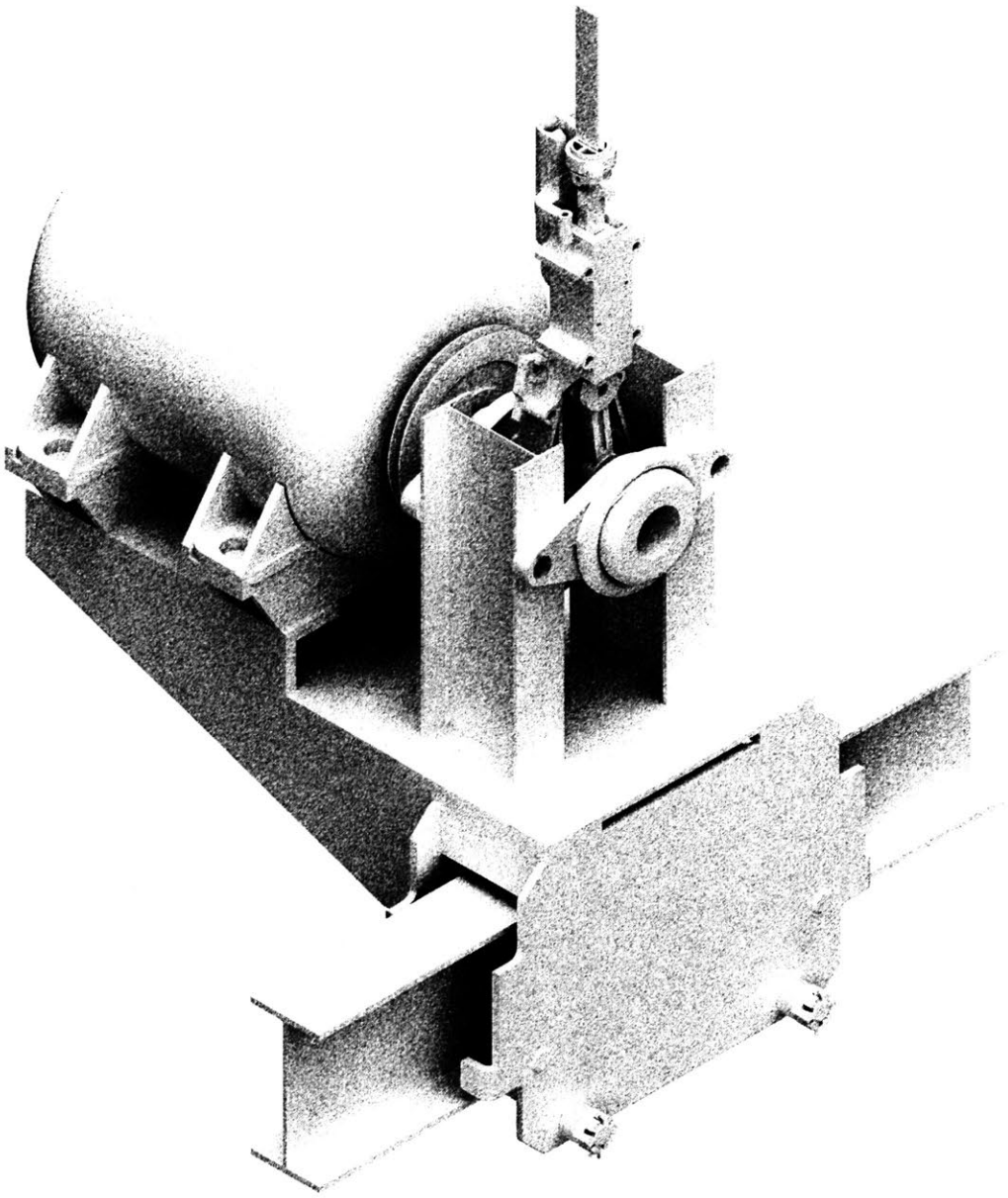


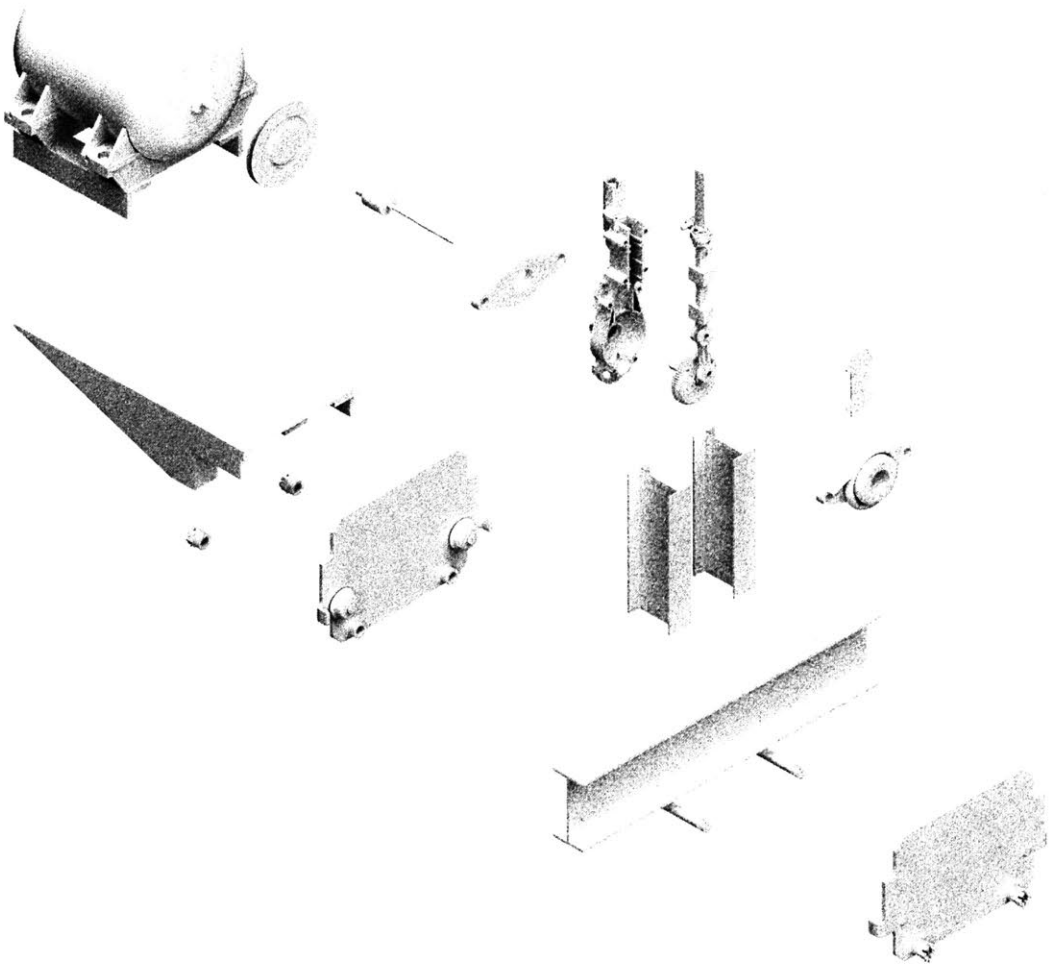


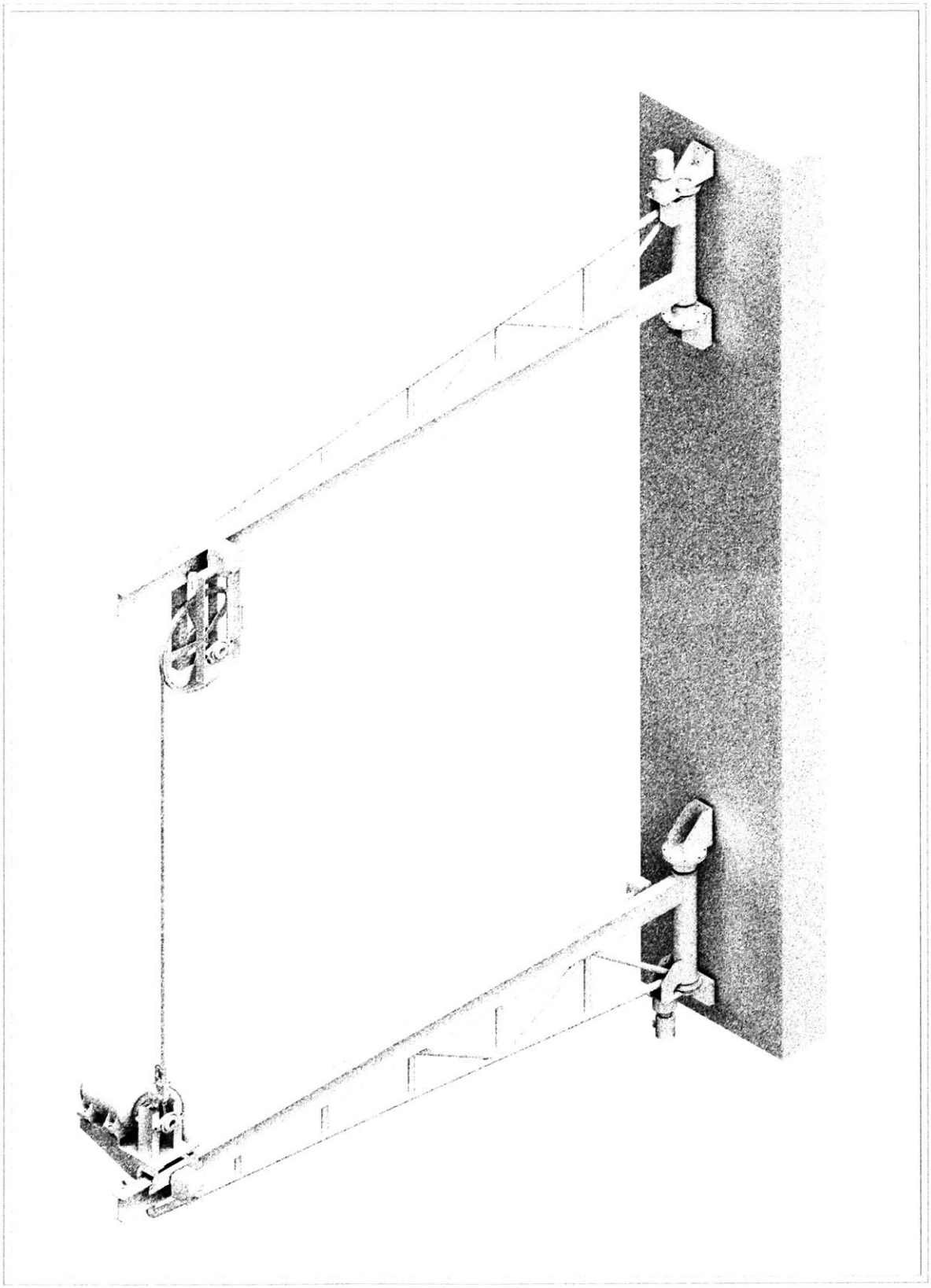












PERFORATOR

JIGSAW & SPINDLE

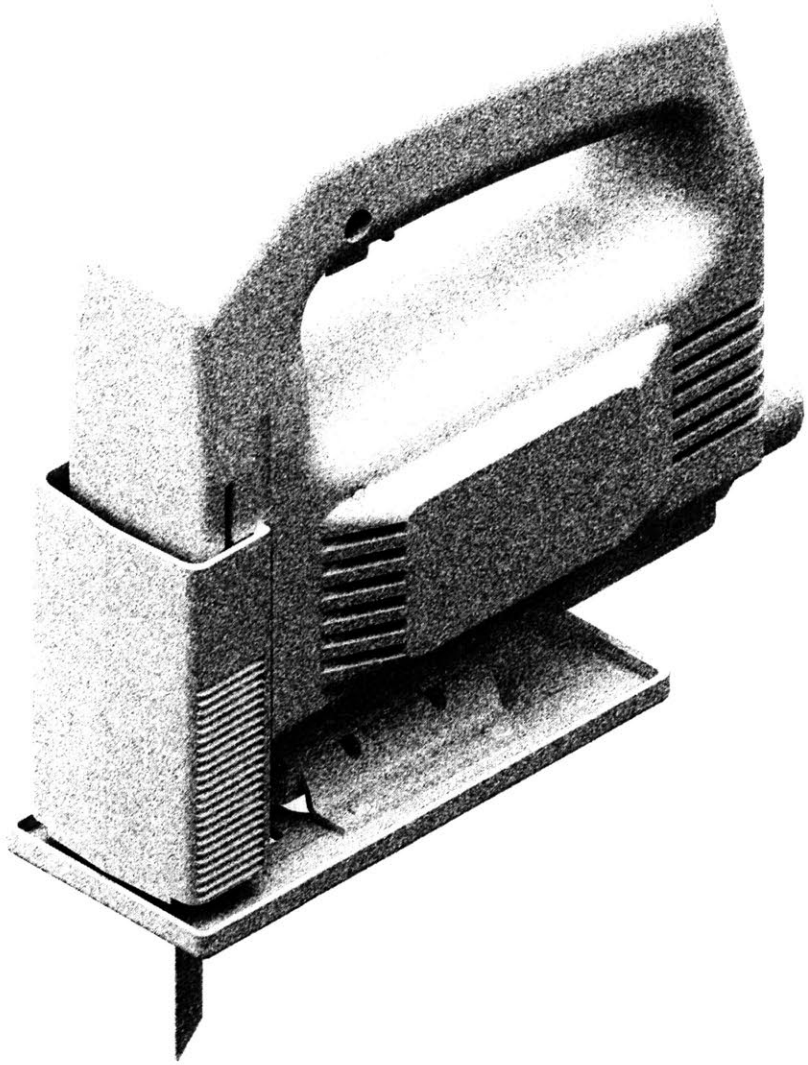
MACHINING ATTACHMENT
SPINDLE ROTATION REDIRECTED
TO DRIVE
JIGSAW RECIPROCAL MOTION

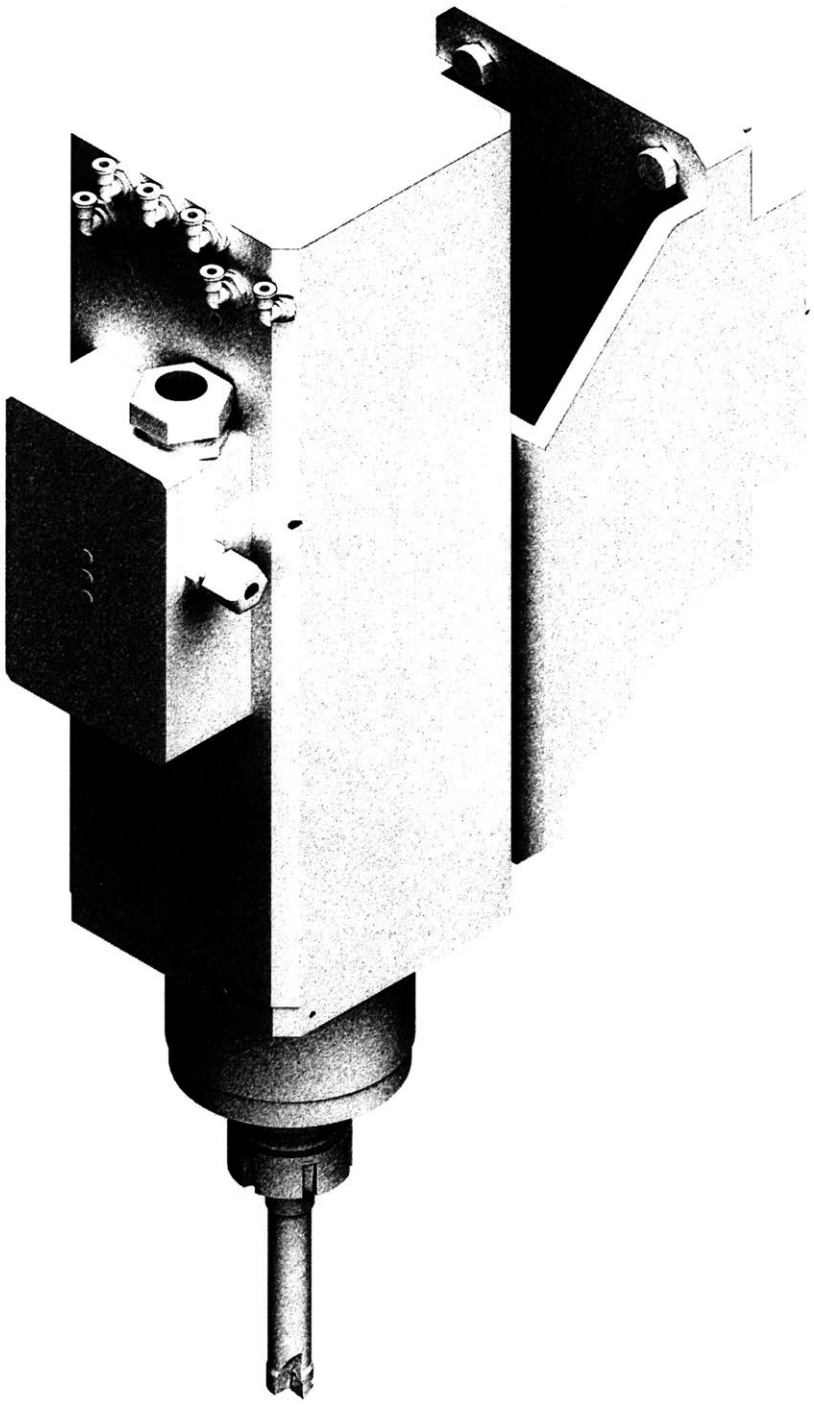
MOUNTED ASSEMBLY

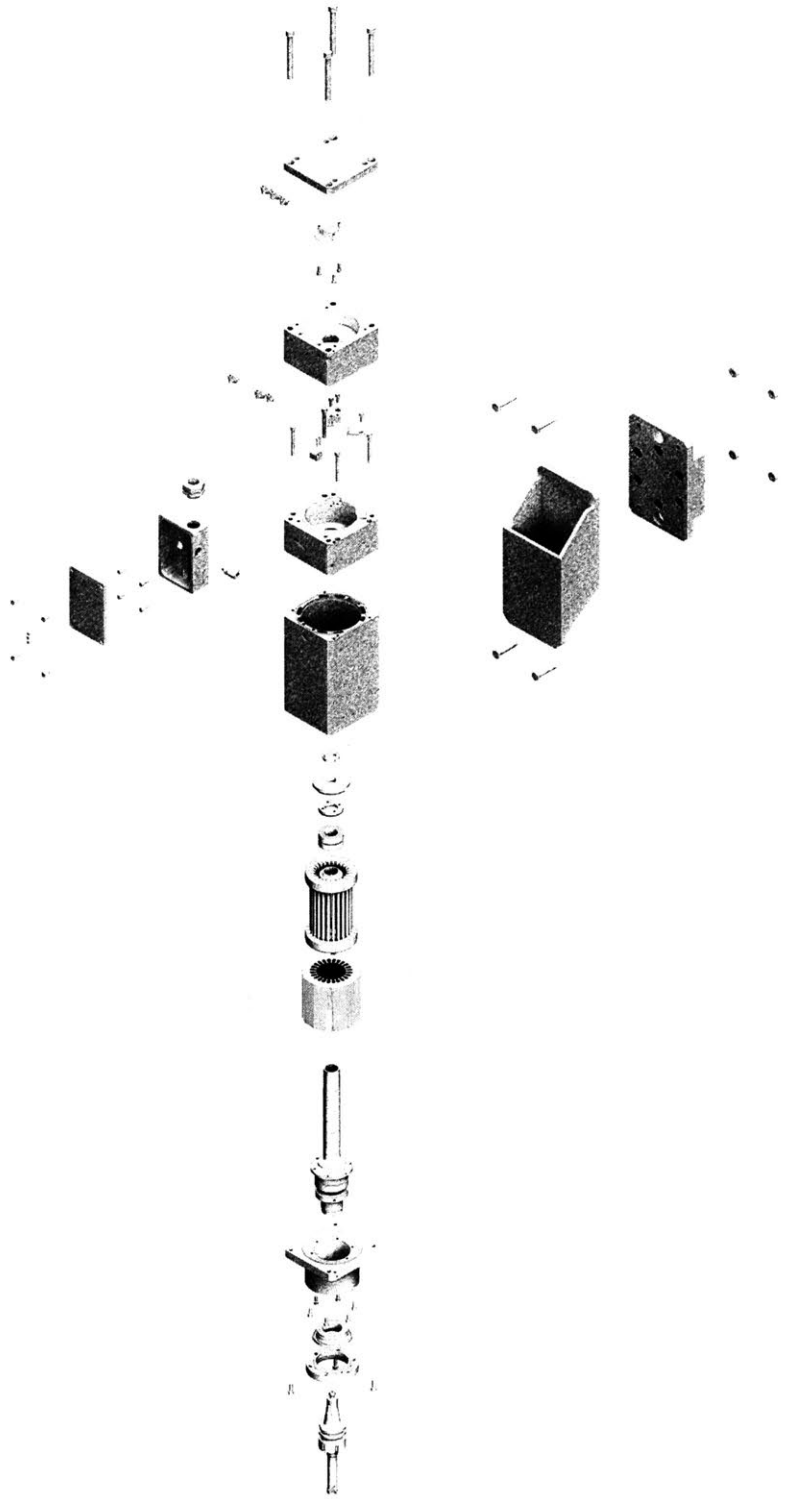
ON
ISO 20 CONE
FOR

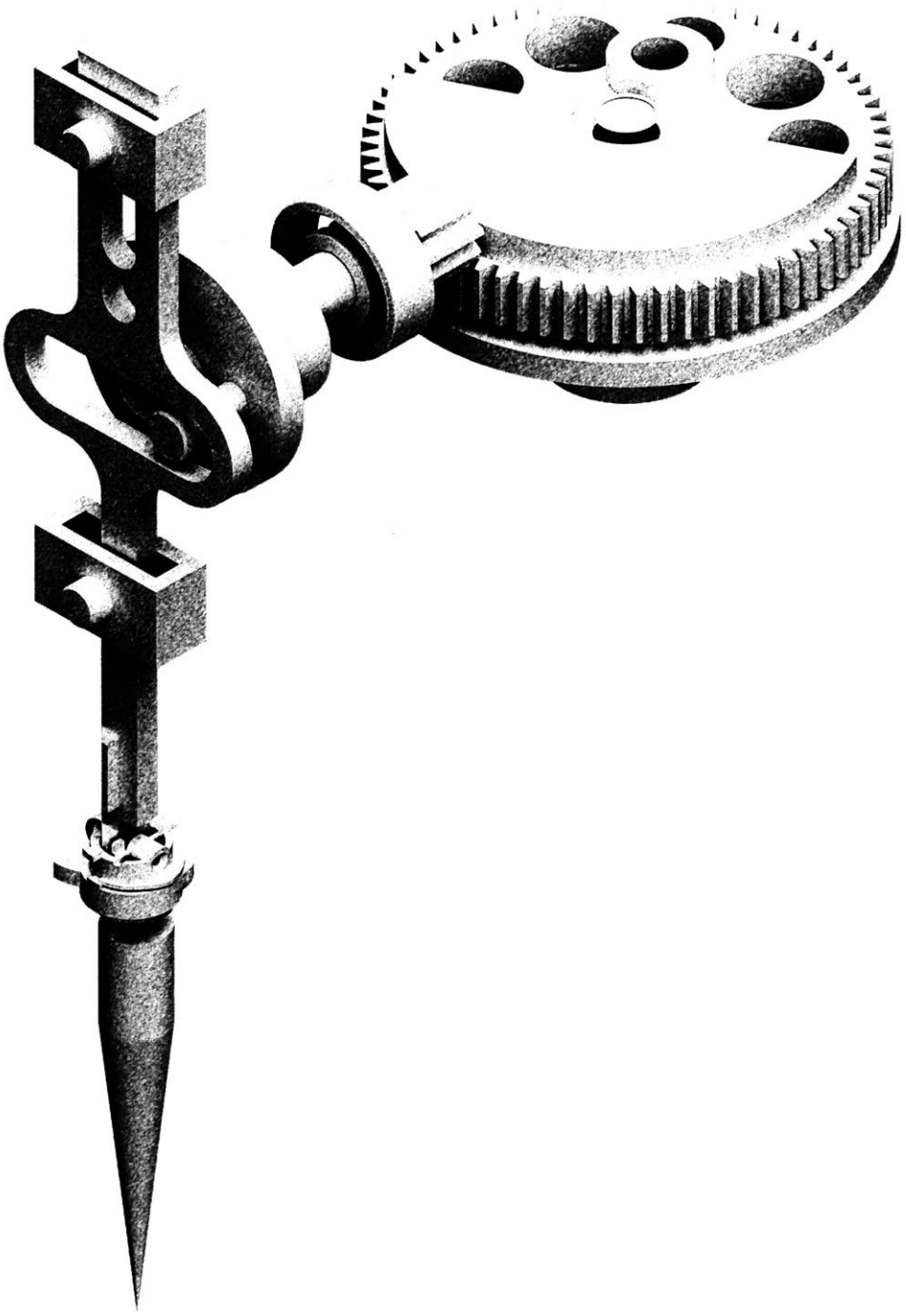
METAL PERFORATION

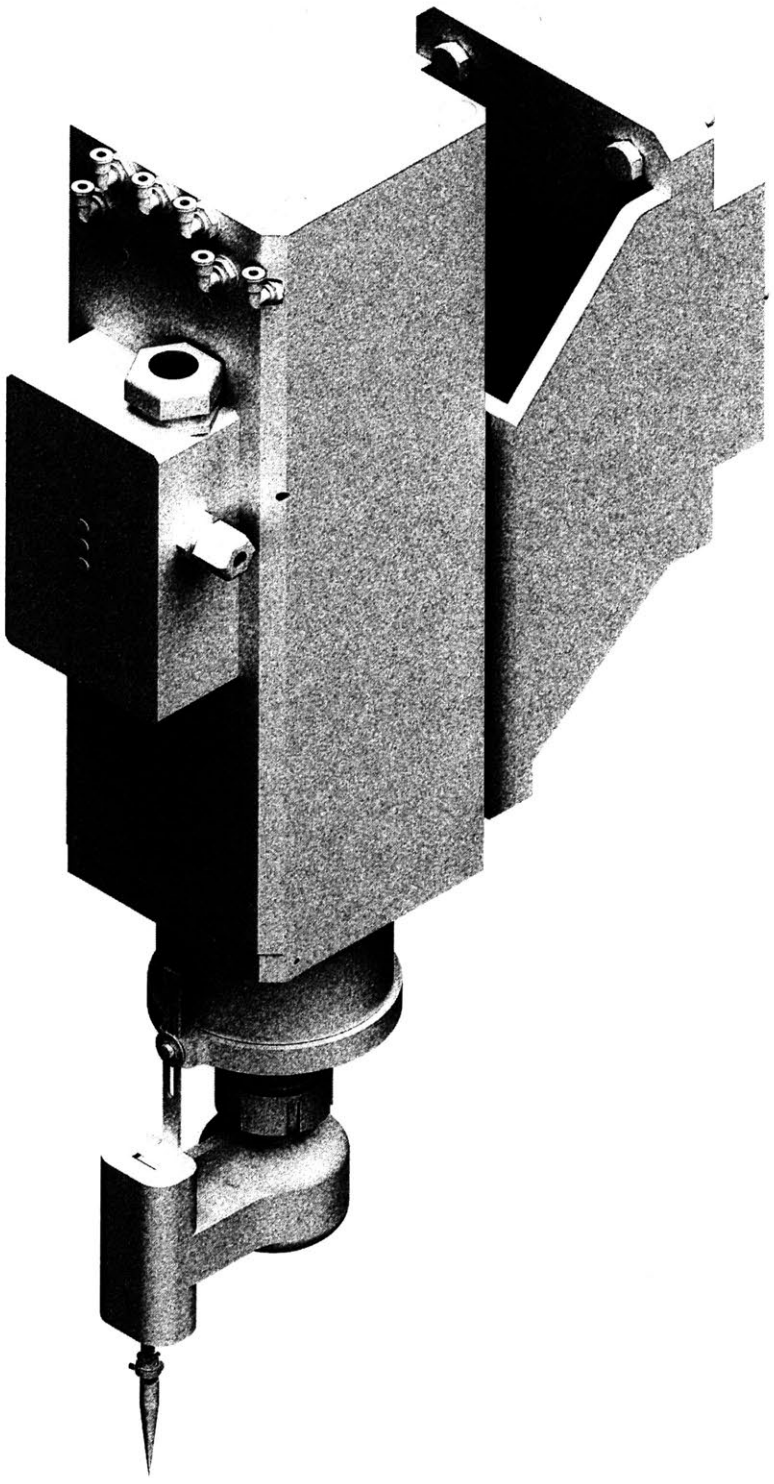
LIST OF PLATES











VENEER PEELER

MILLING MACHINE, METAL SHEAR

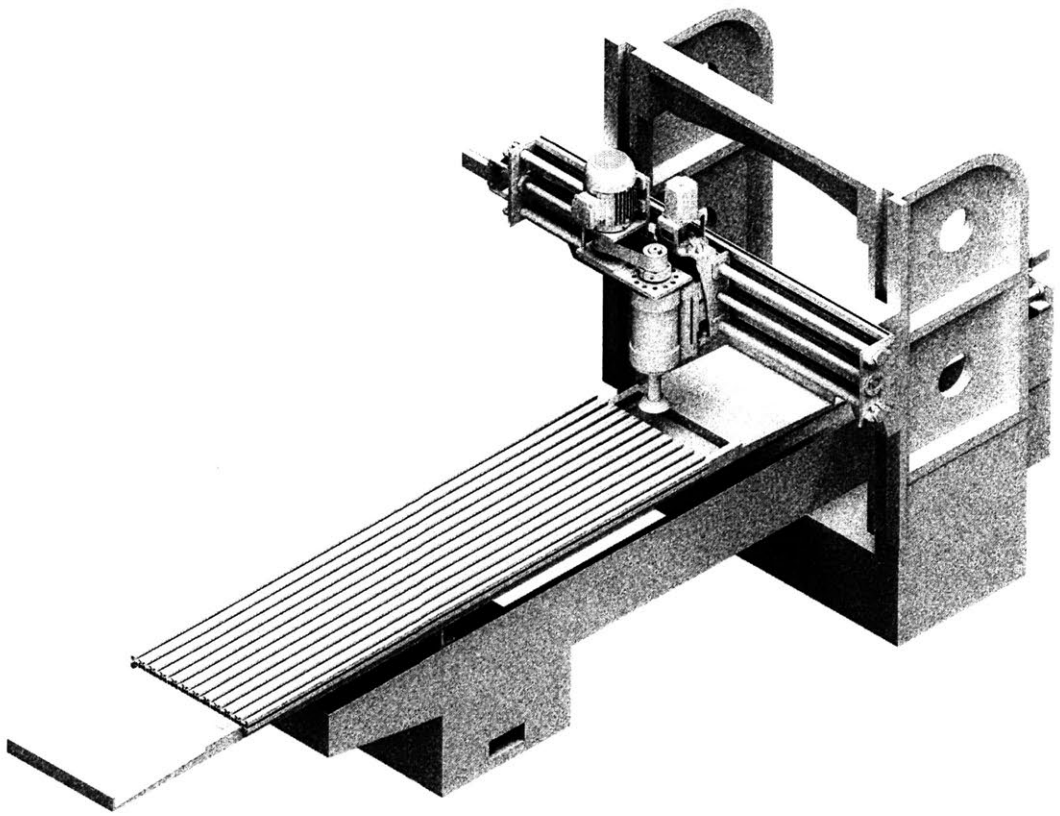
REORIENT SHEAR CUTTING ACTION
&
AUGMENT LATERAL SURFACE MILLING

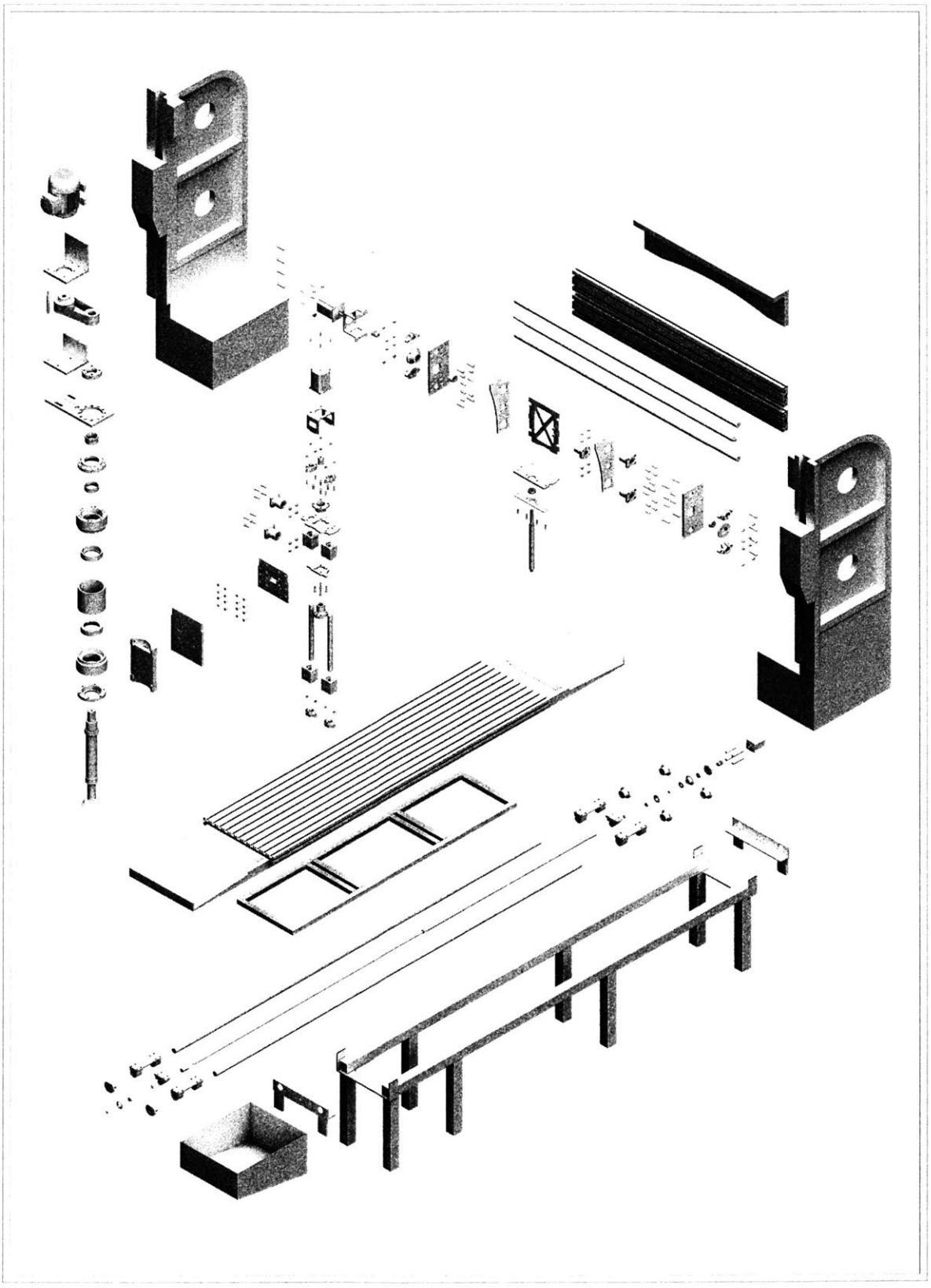
PEELING MACHINE

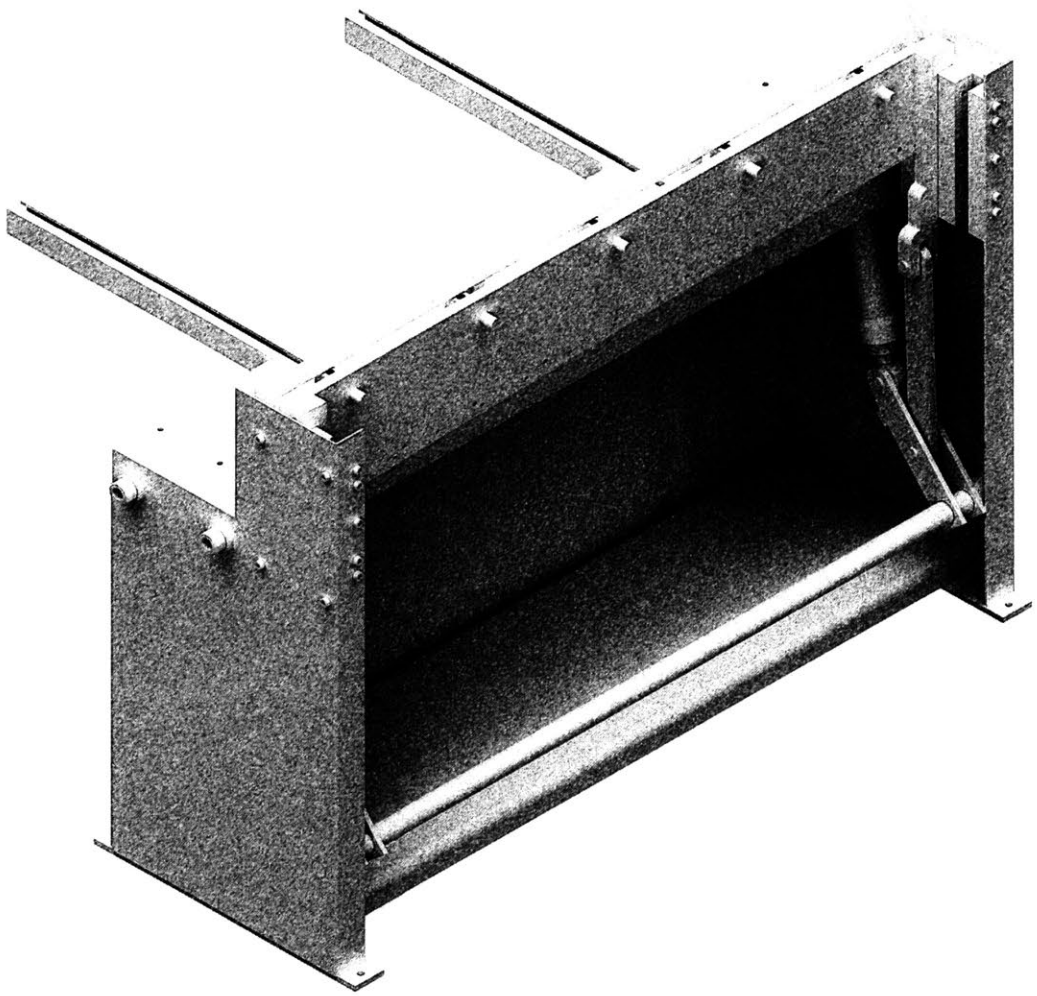
TO

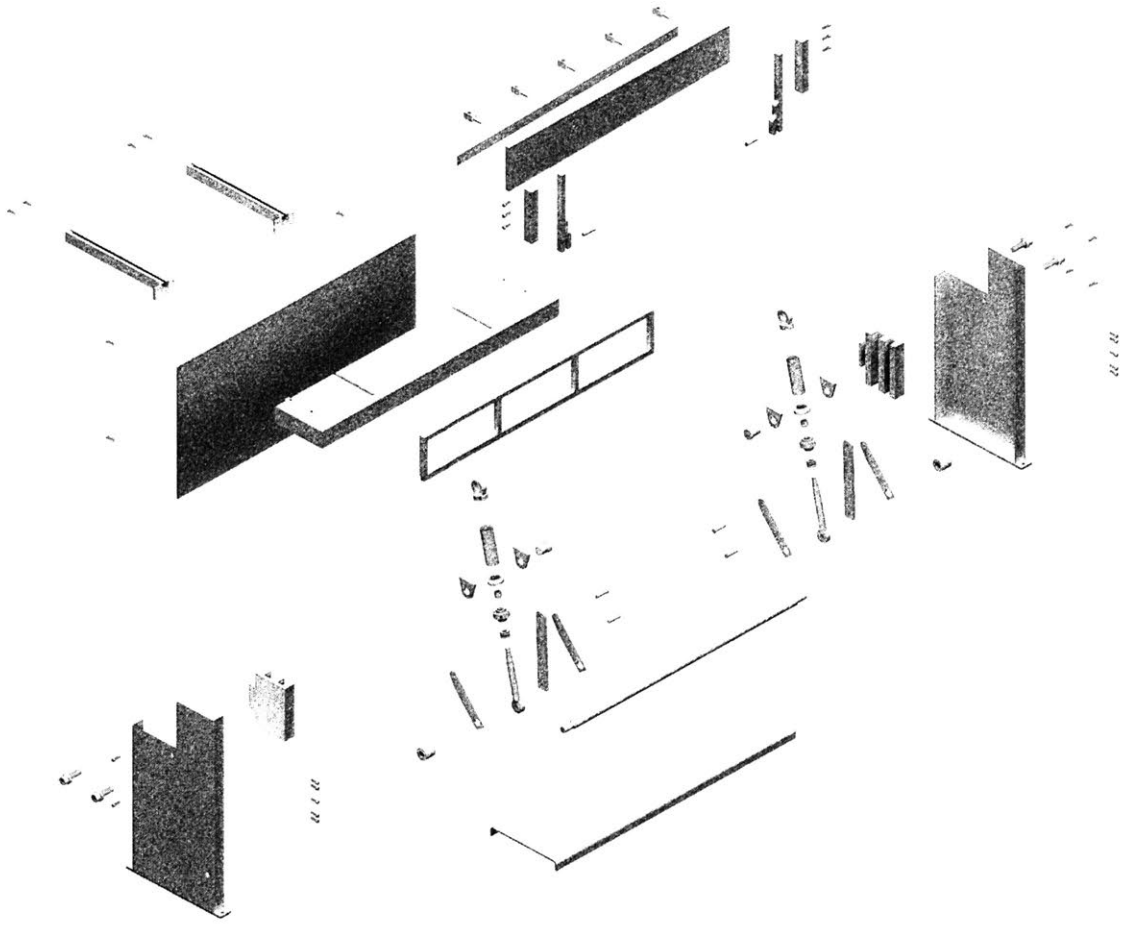
PROCESS VARIABLE DIMENSION WOOD SALVAGE

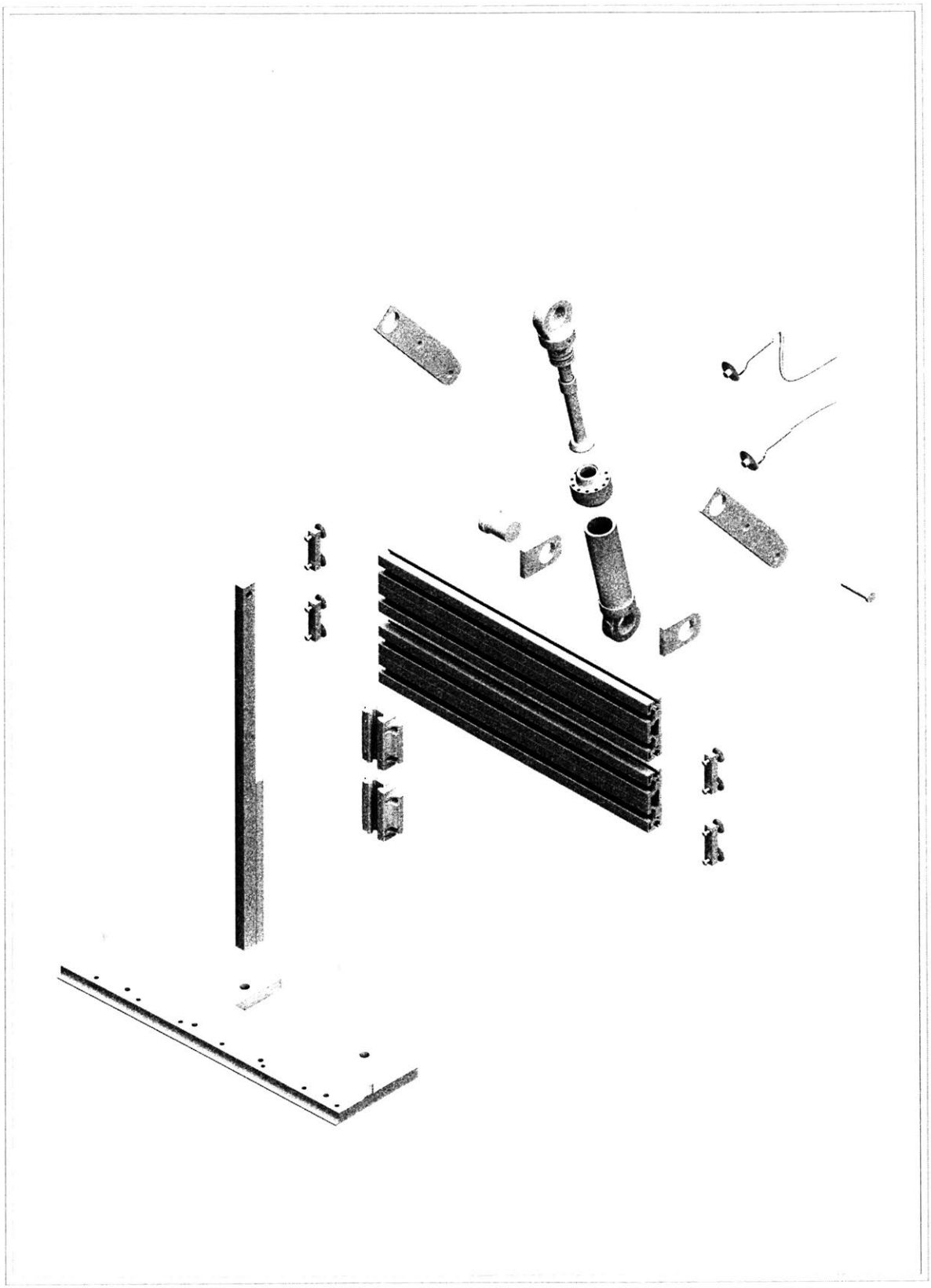
LIST OF PLATES

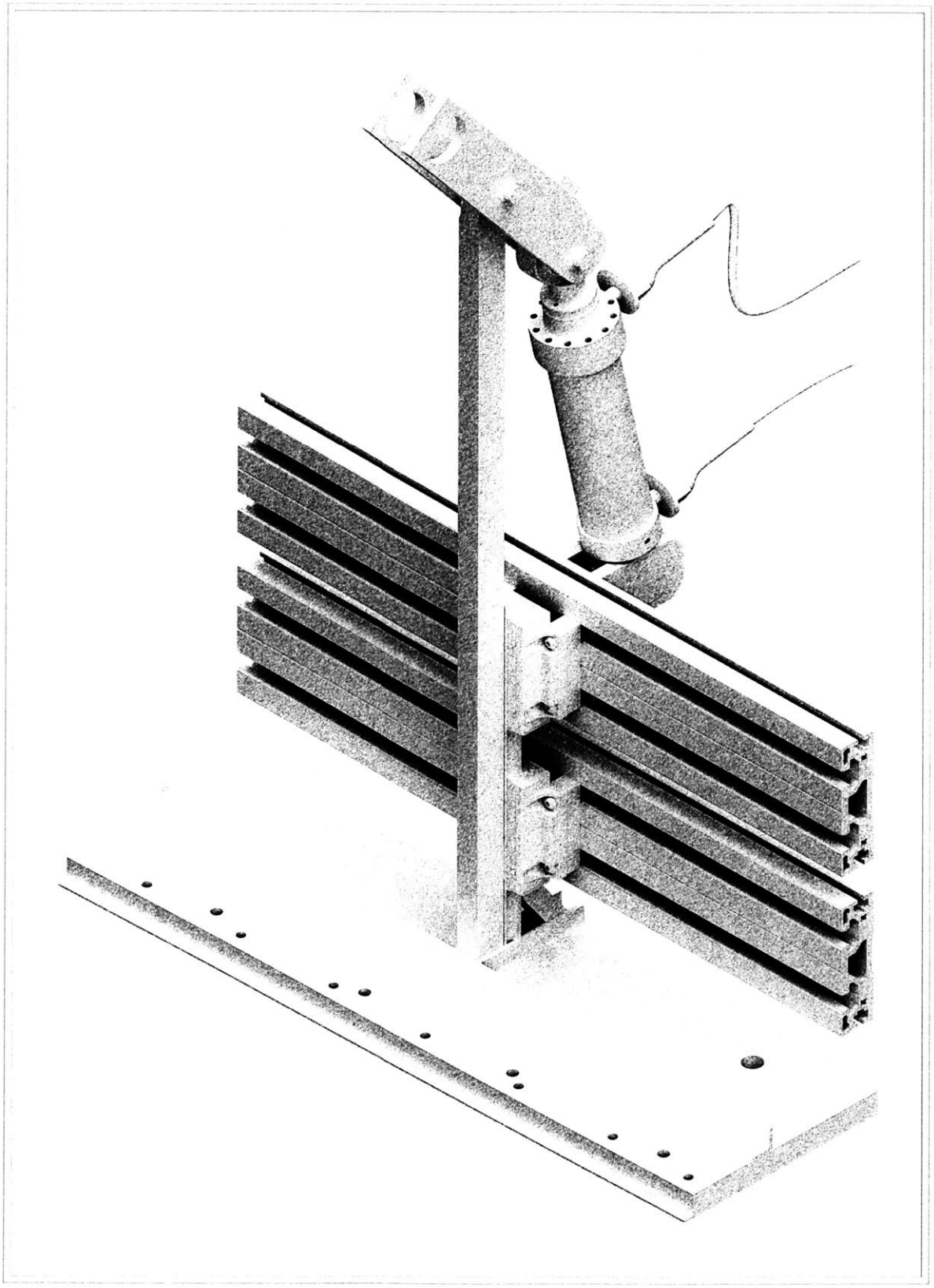


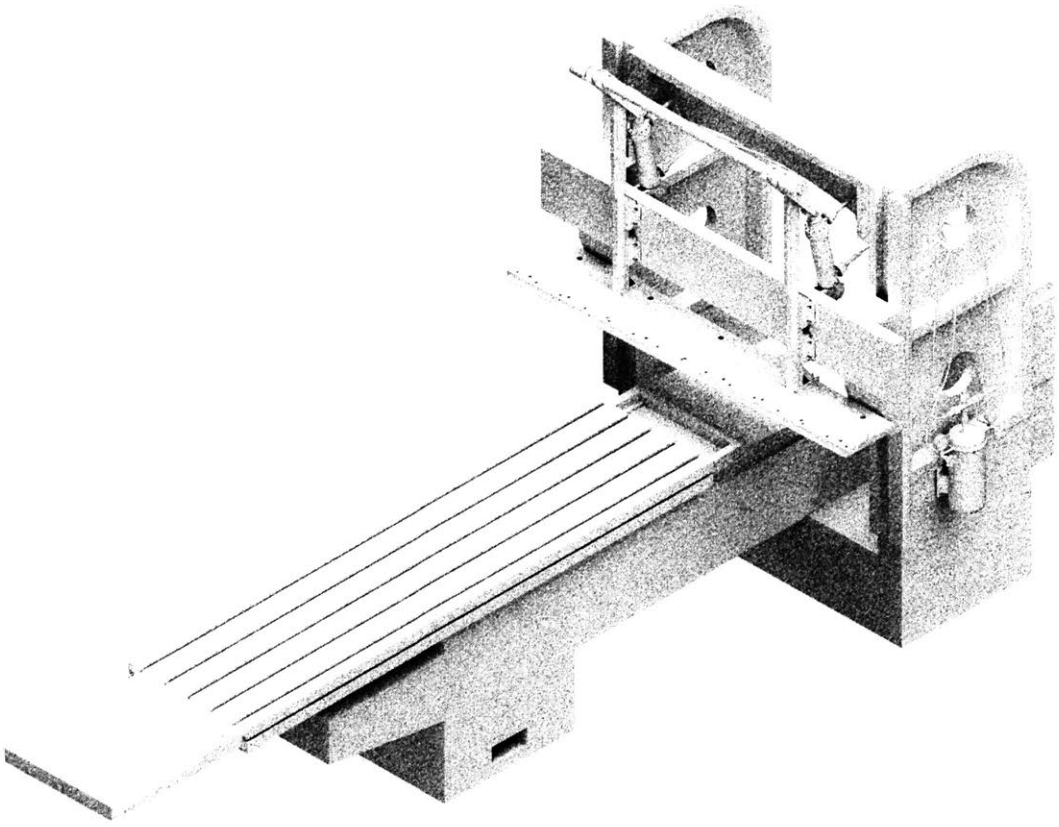












MIXER

DRILL PRESS

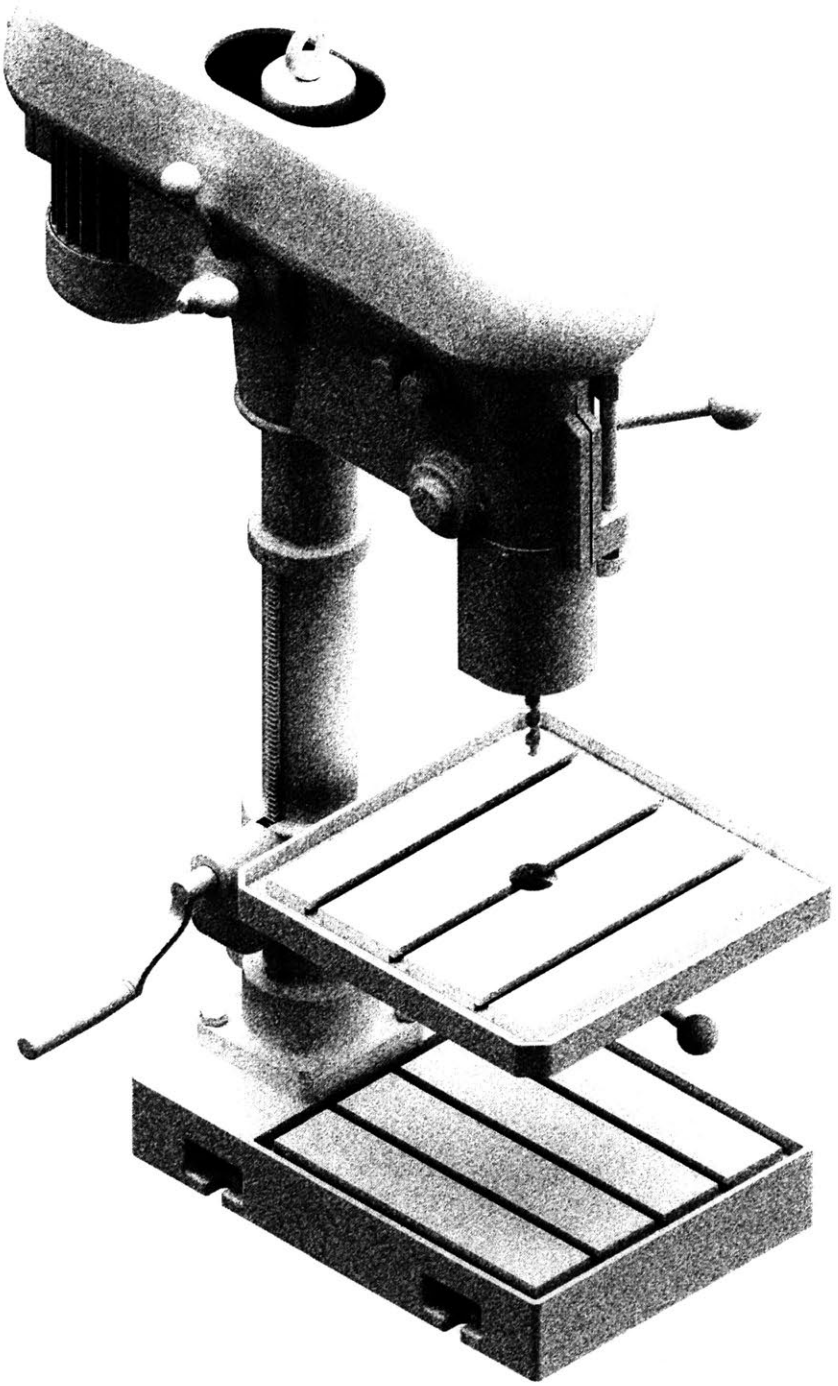
RECONFIGURED
FOR
EXTENDED TOOL TRAVEL
COUPLED
WITH
MIXING LADLE

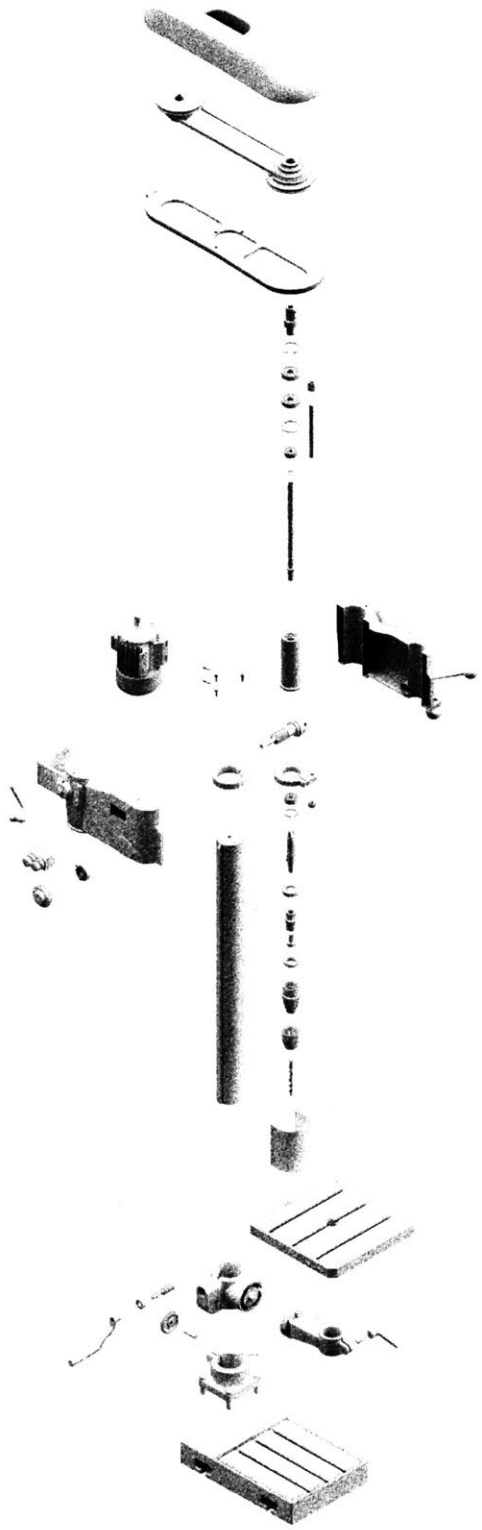
VARIABLE MIXING MACHINE

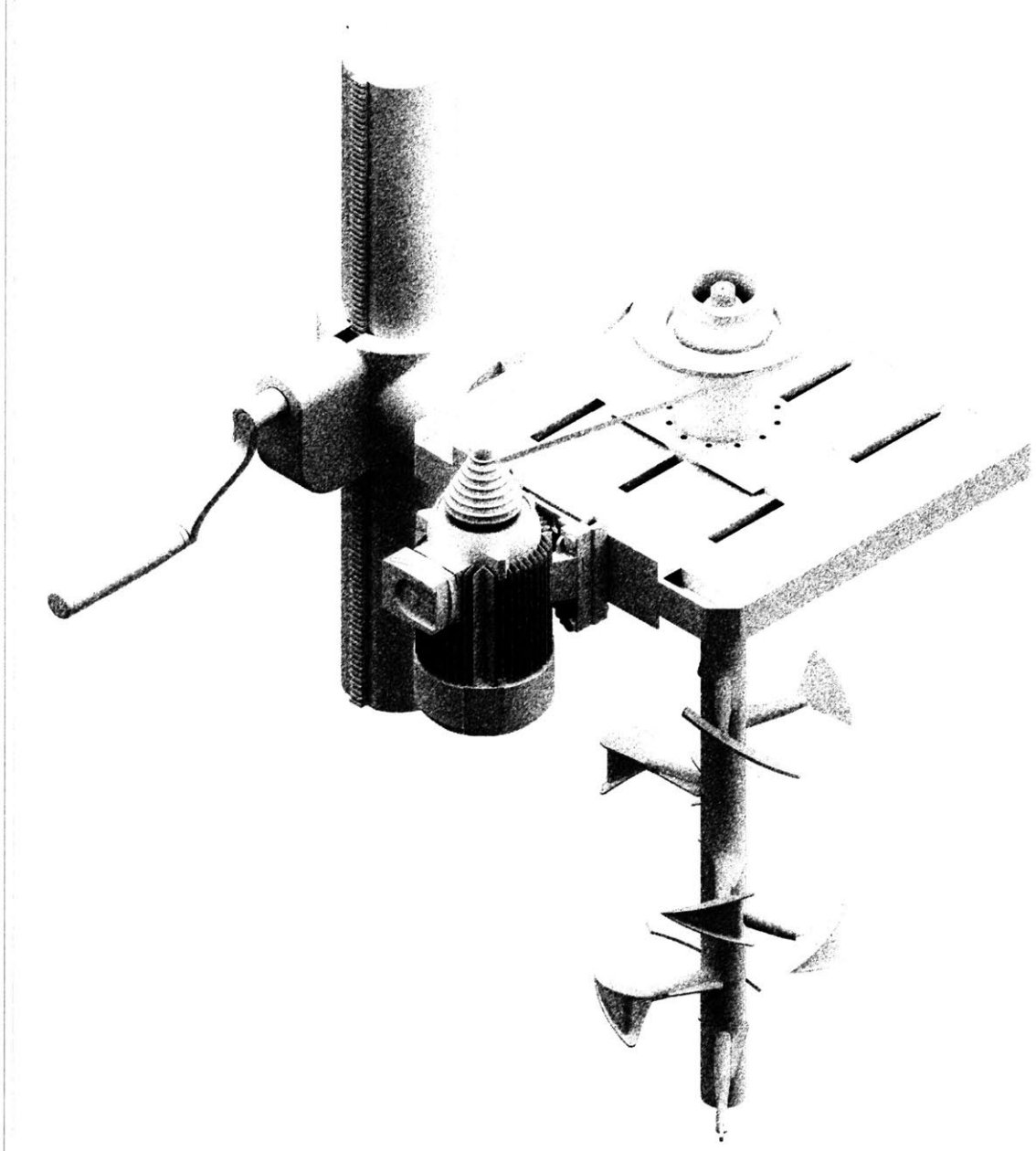
FOR

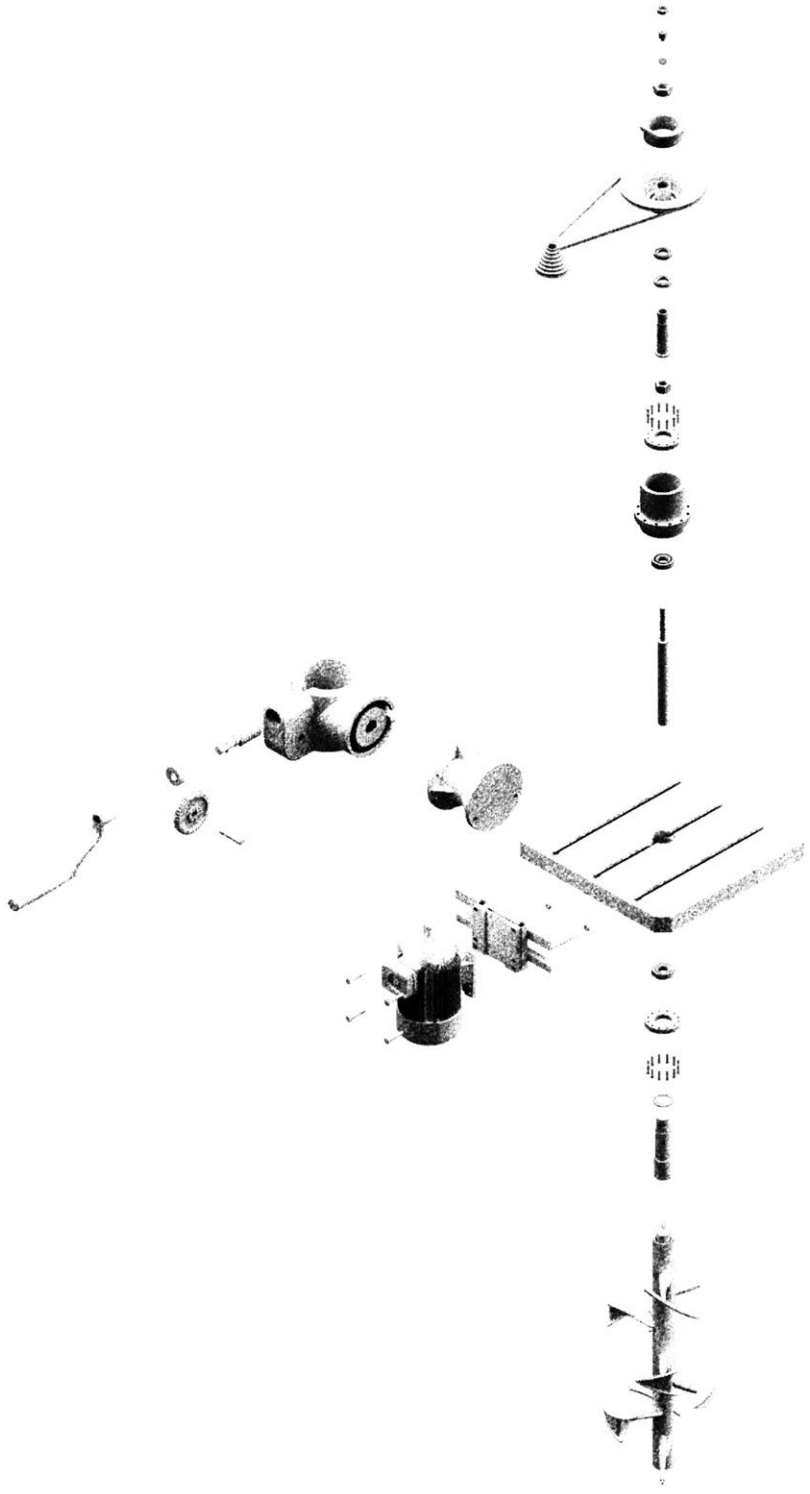
PROCESSING NON FERROUS WASTE

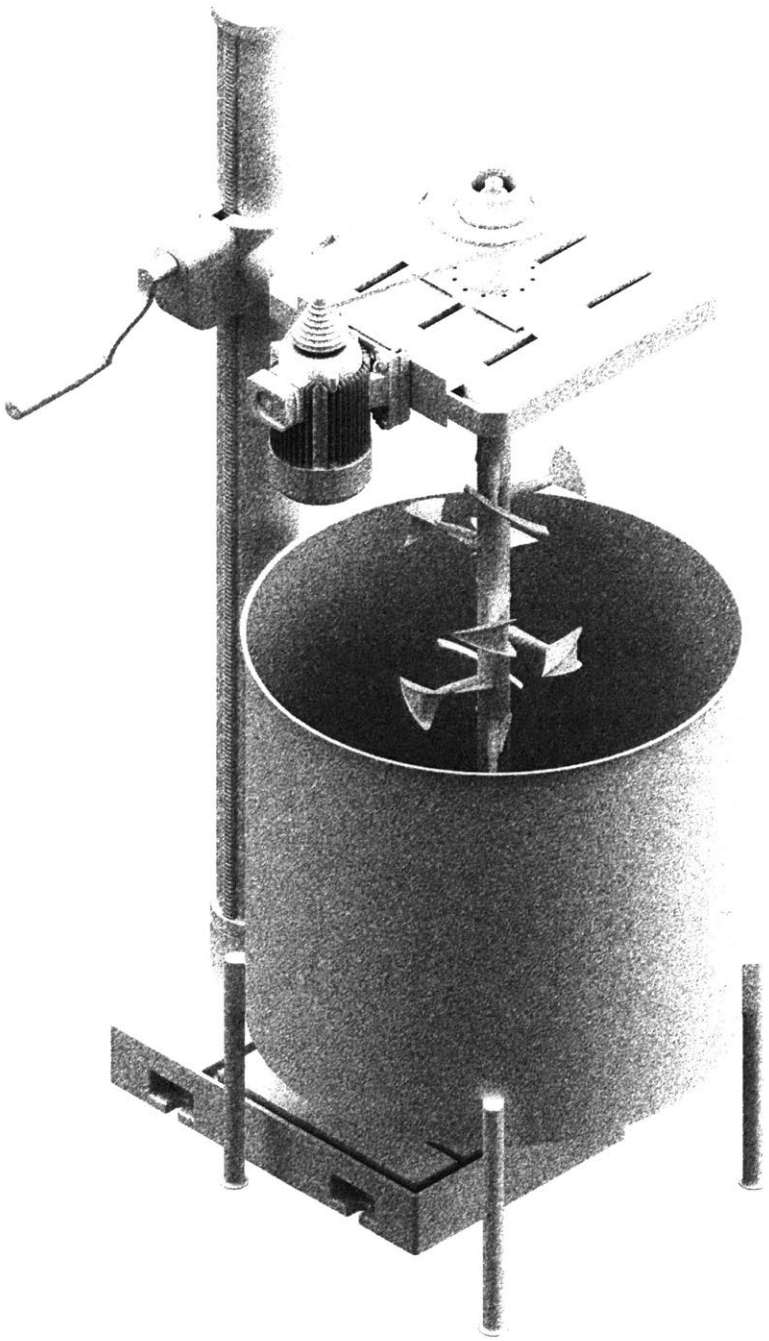
LIST OF PLATES











EARTH FORGE

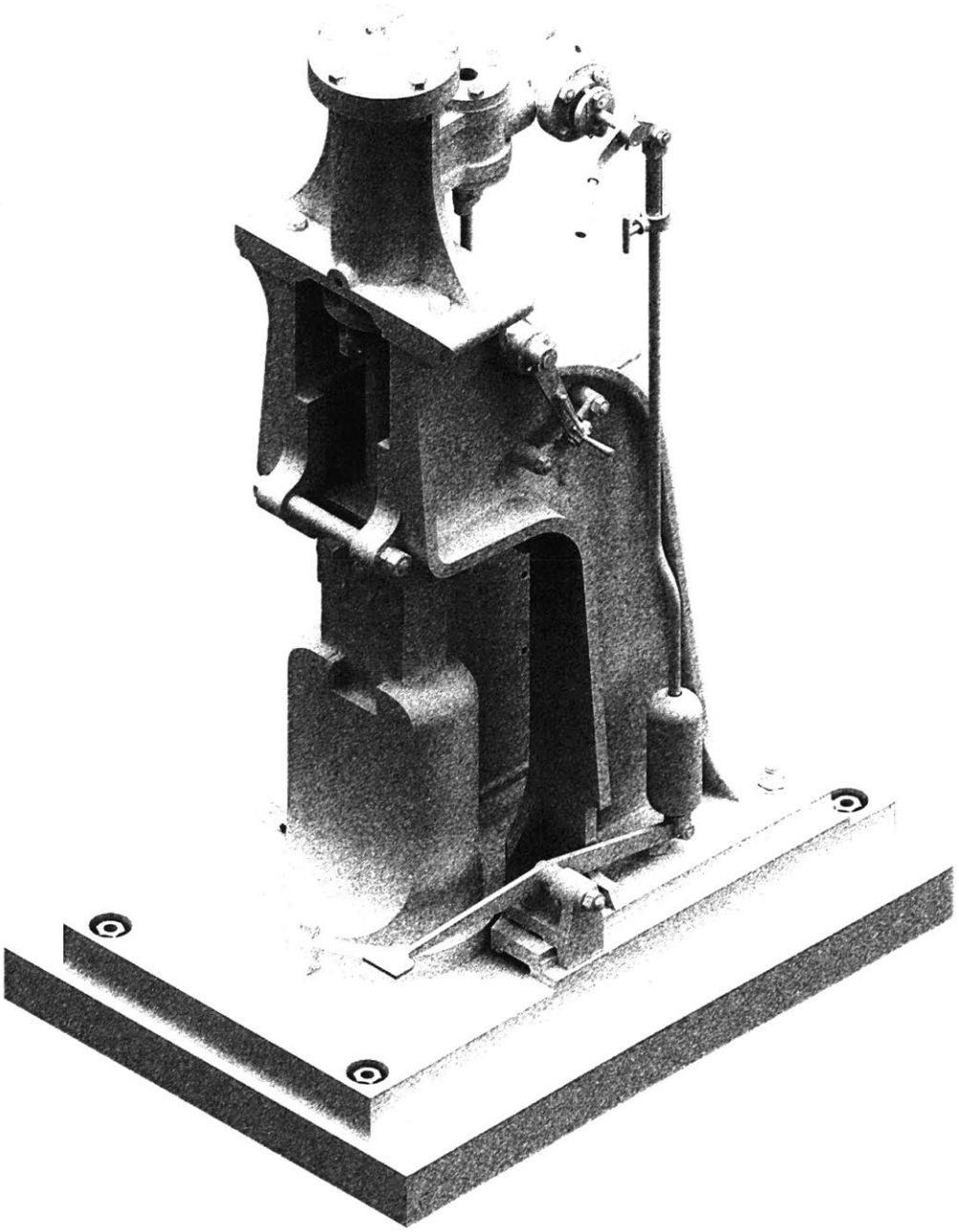
STEAM FORGE, ROLLING CONVEYOR

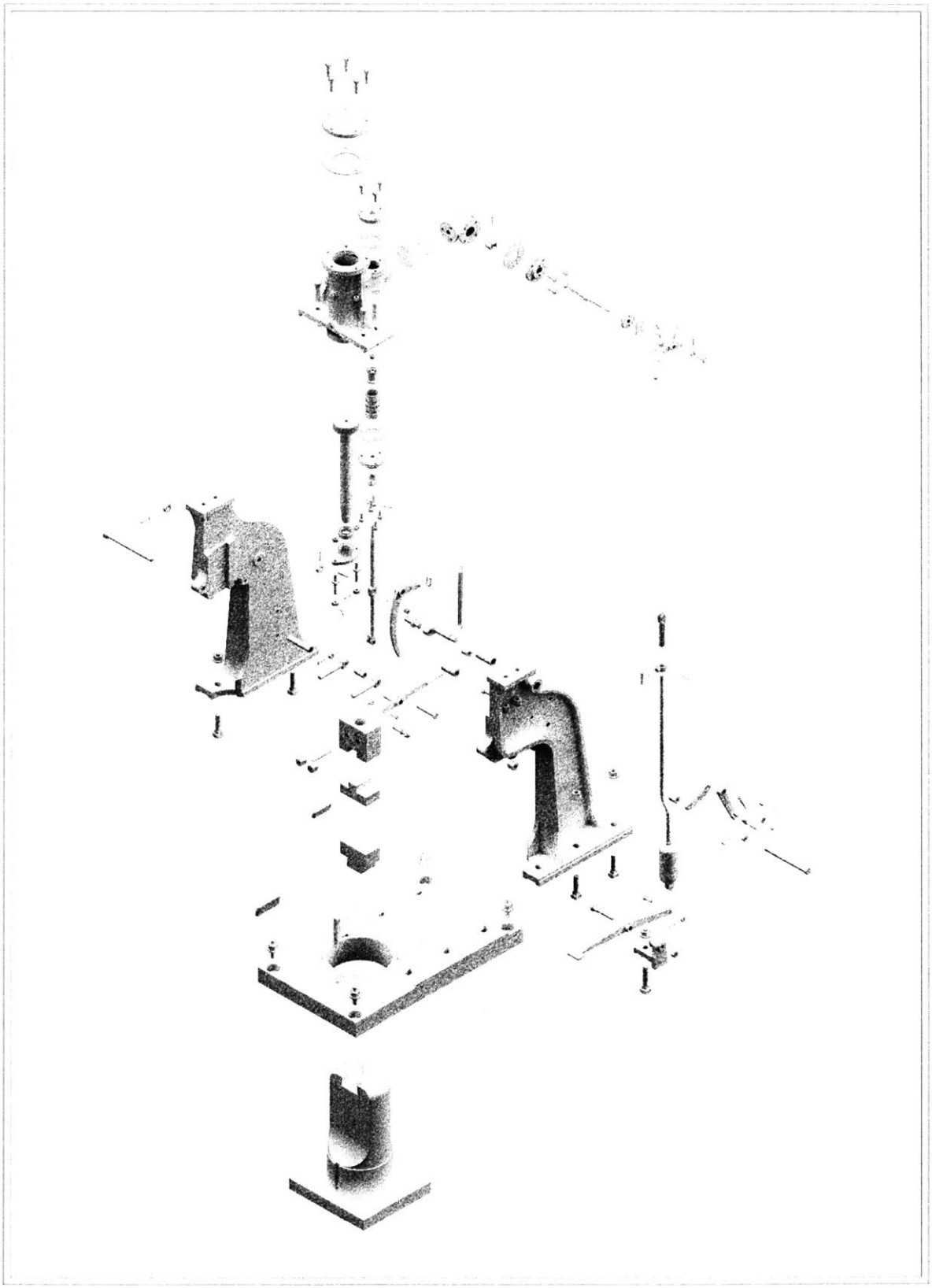
COMBINE LINEAR TRAVEL
WITH RECIPROCAL FORGING

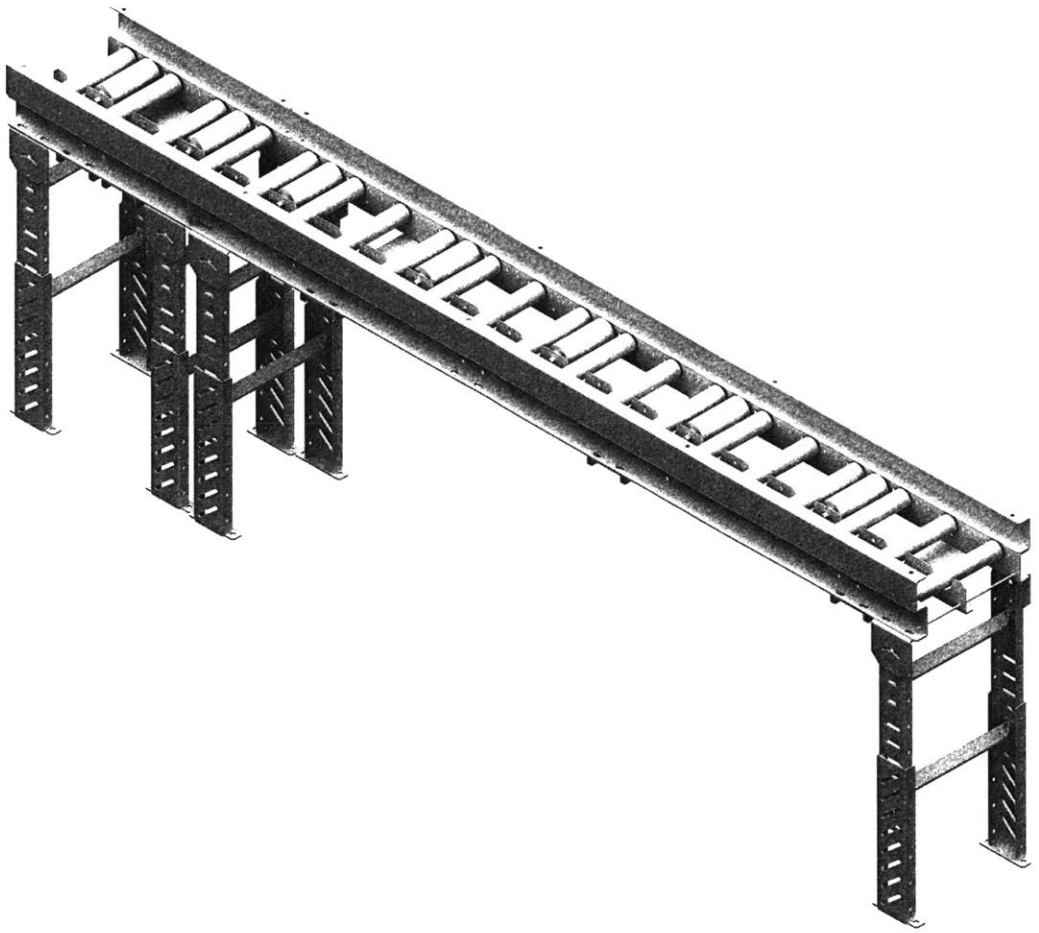
REPLACE STEAM INTAKE
WITH
PRESSURIZED AIR

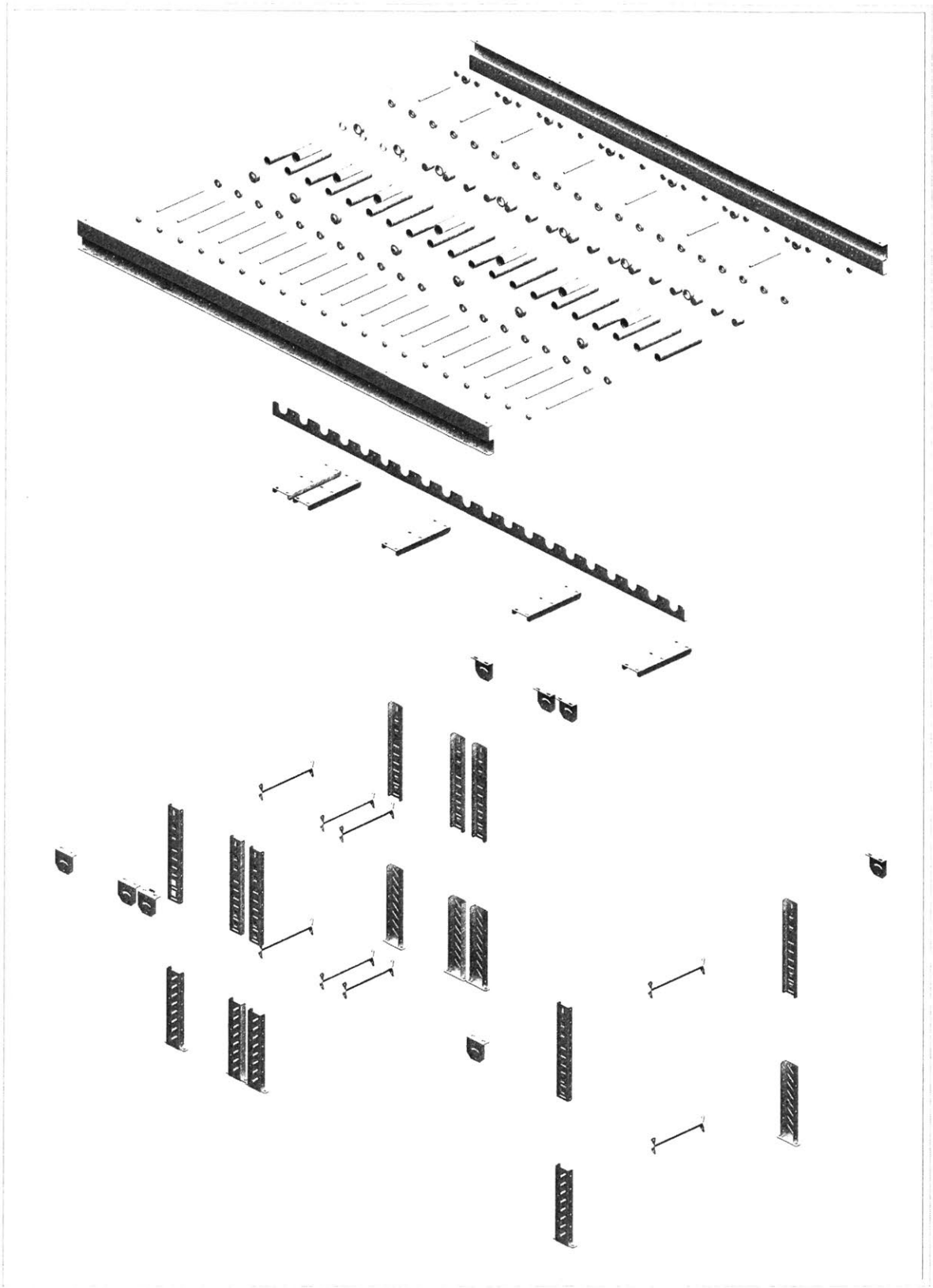
TRAVELLING PRESS FOR EARTH COMPACTION

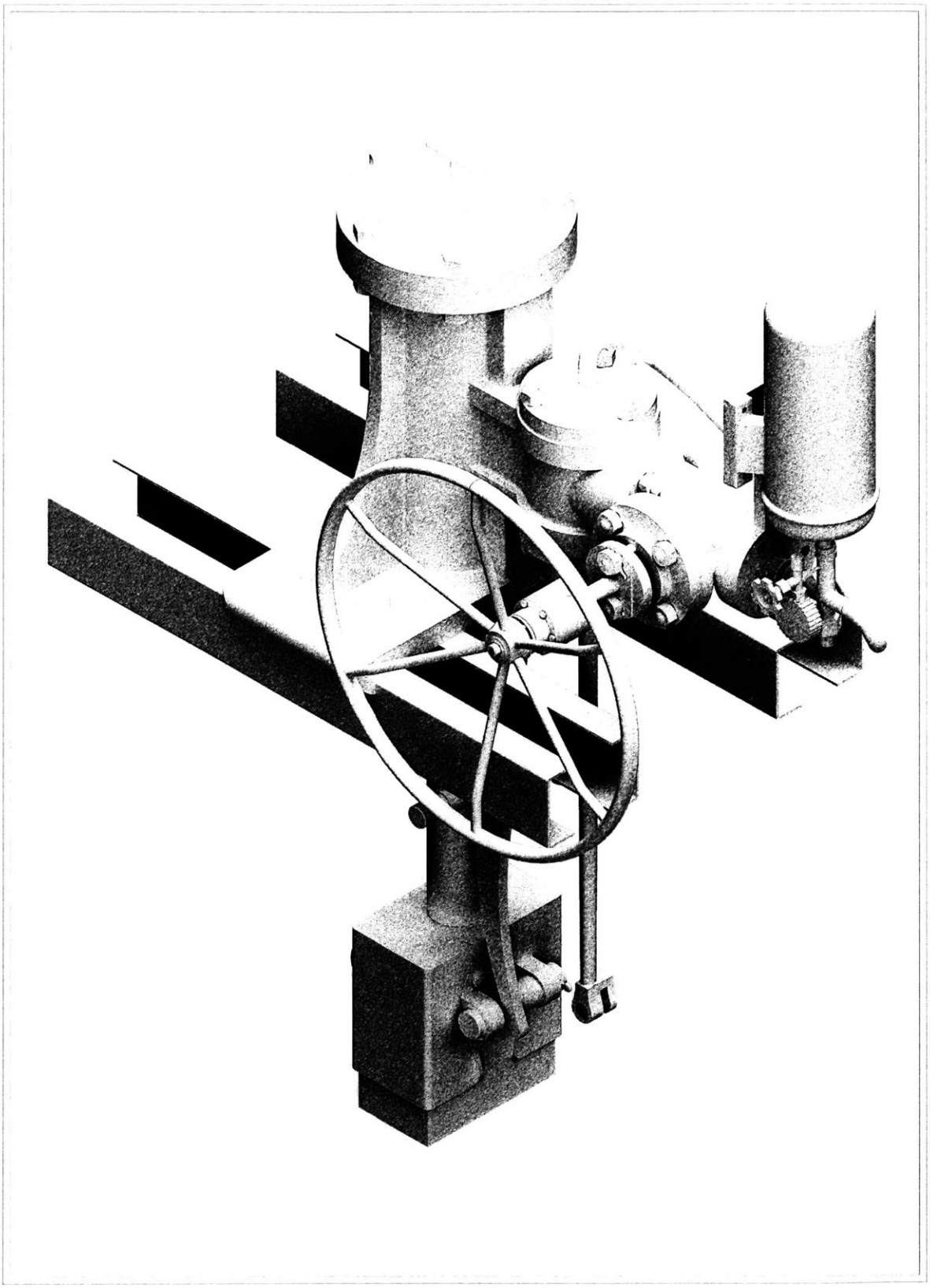
LIST OF PLATES

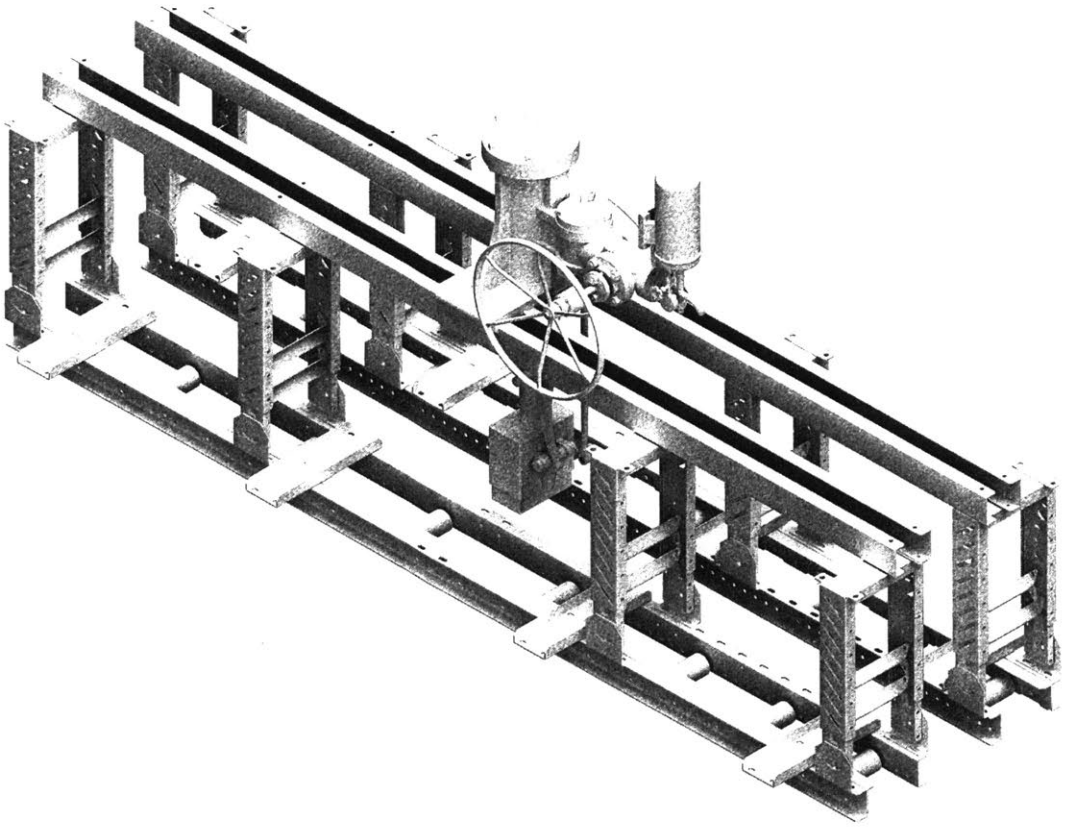












SCRUBBER

CUPOLA FURNACE

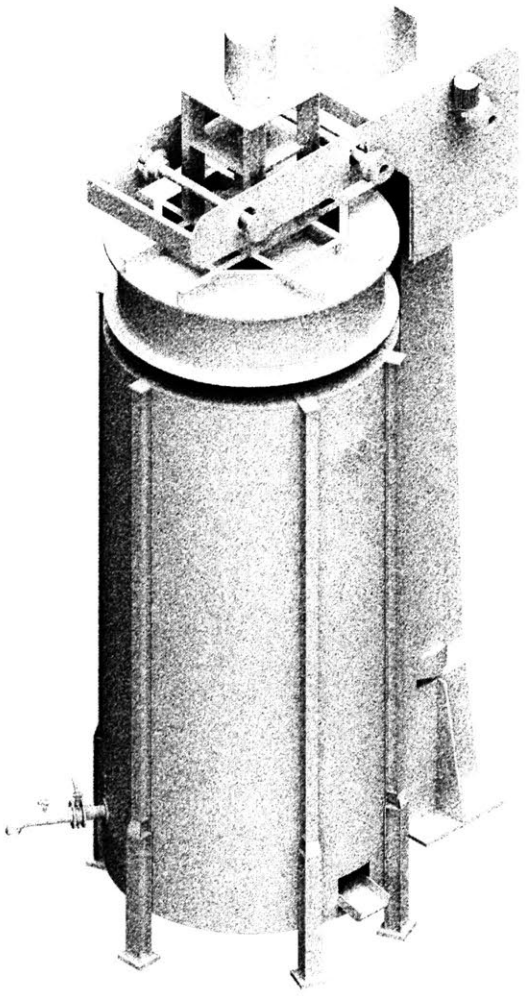
EIGHT FURNACES
DISMANTLED & REORGANIZED
REDIRECT HEAT TRANSFER

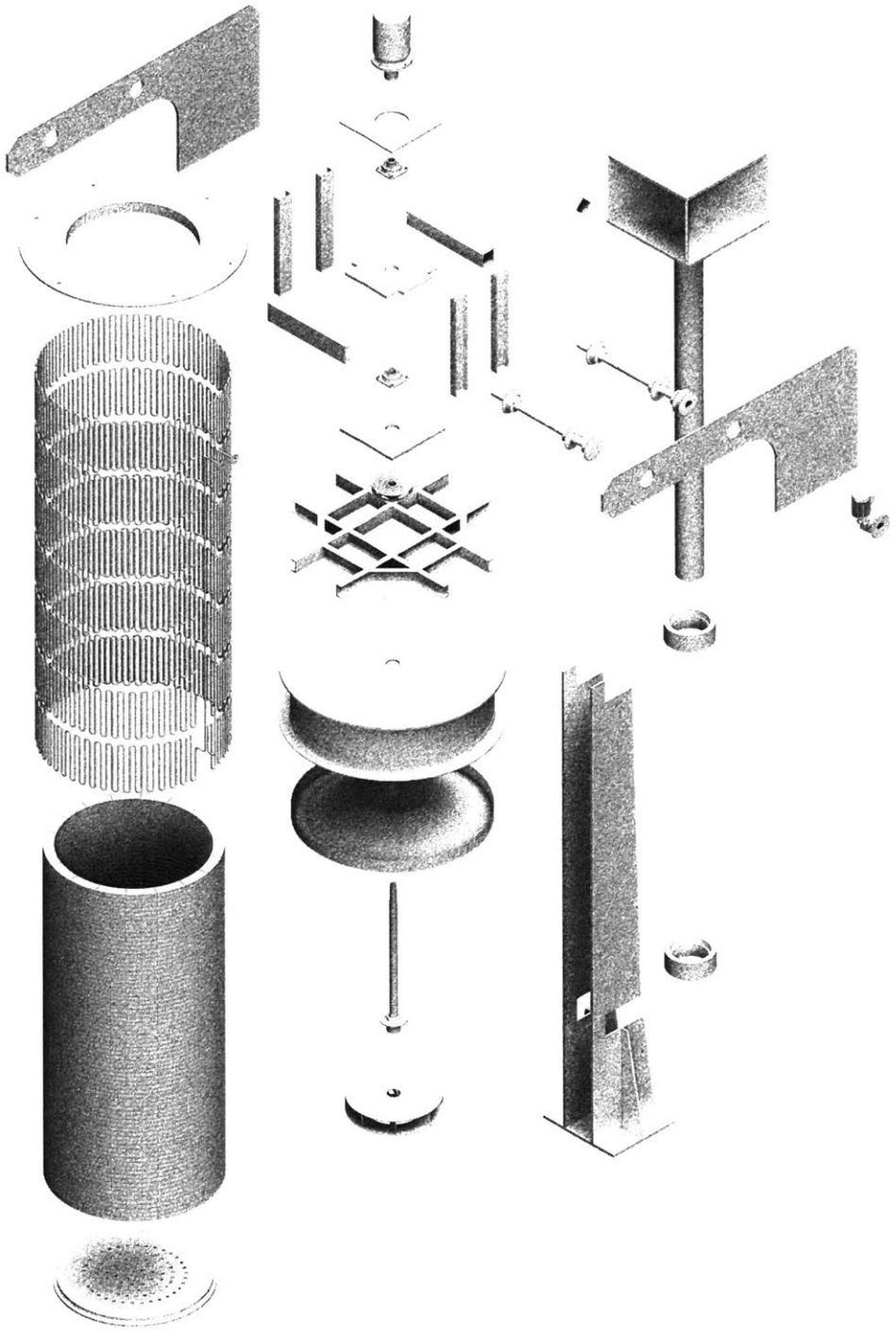
TOWER

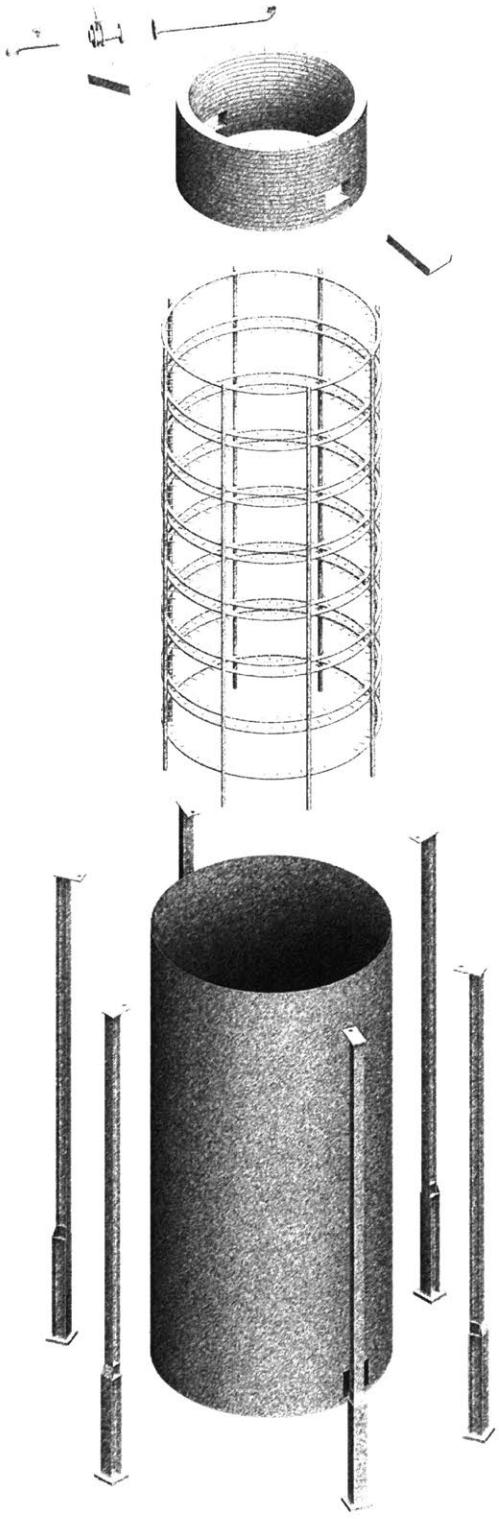
FOR

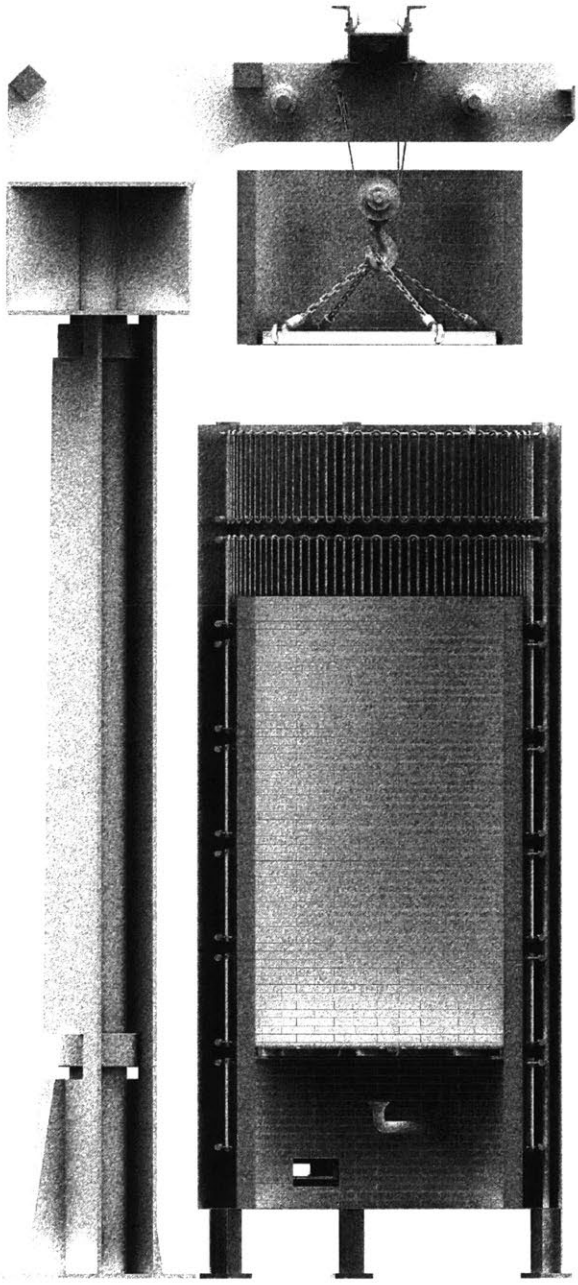
OFF GAS CLEANING

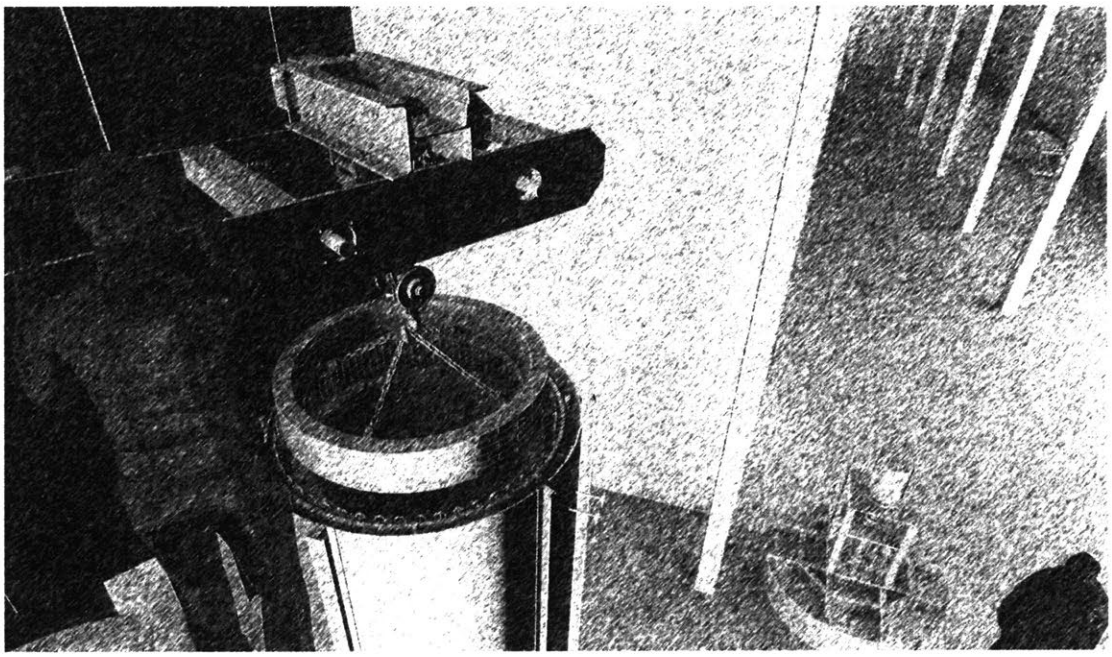
LIST OF PLATES

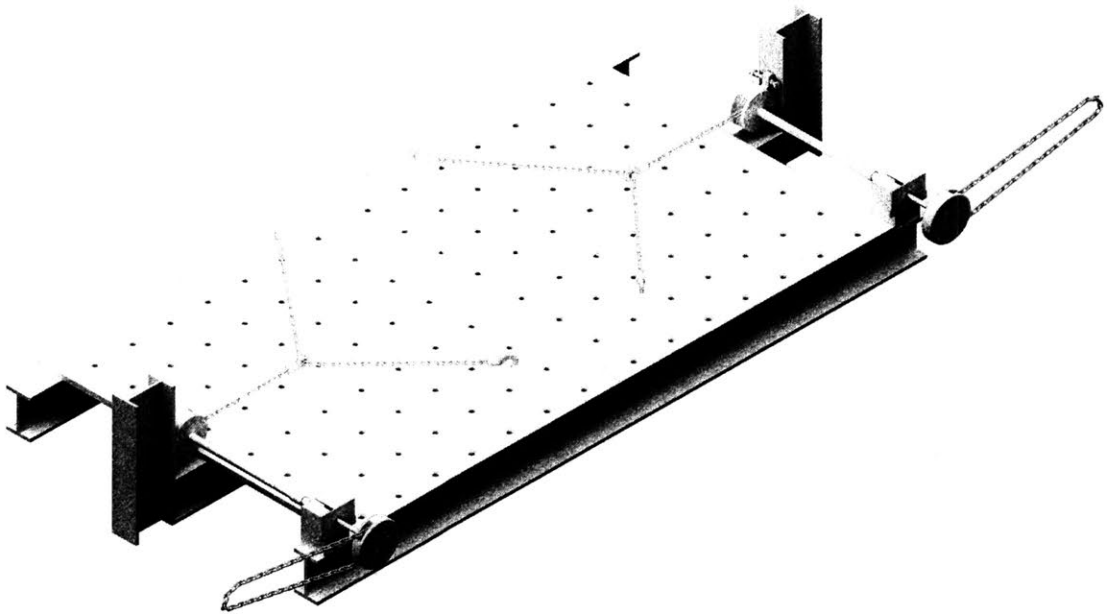


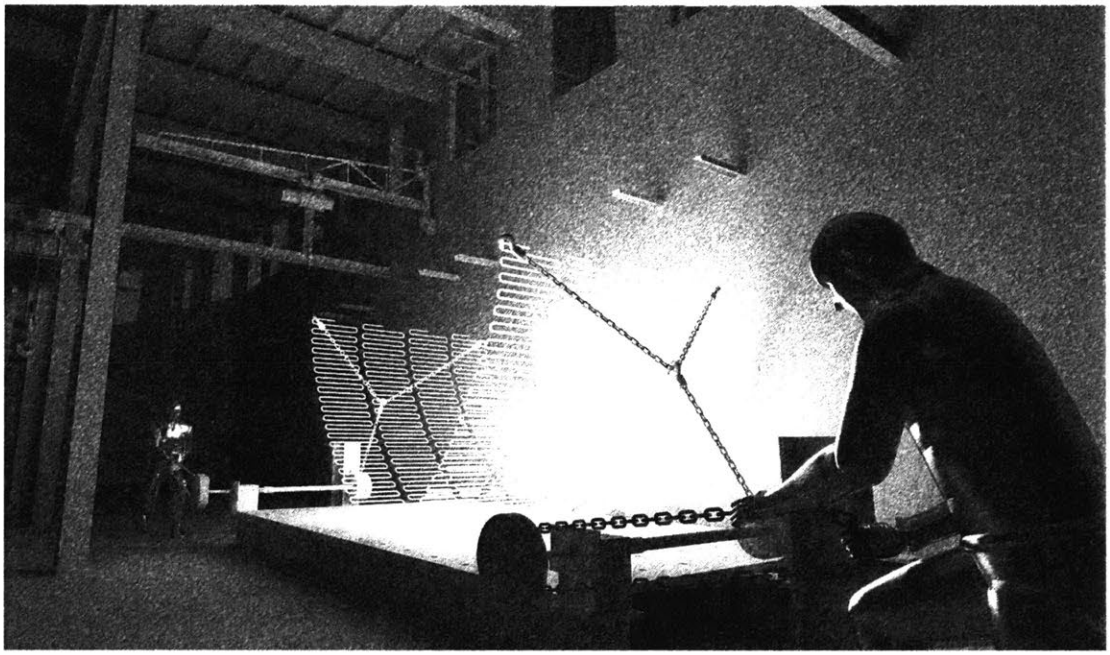


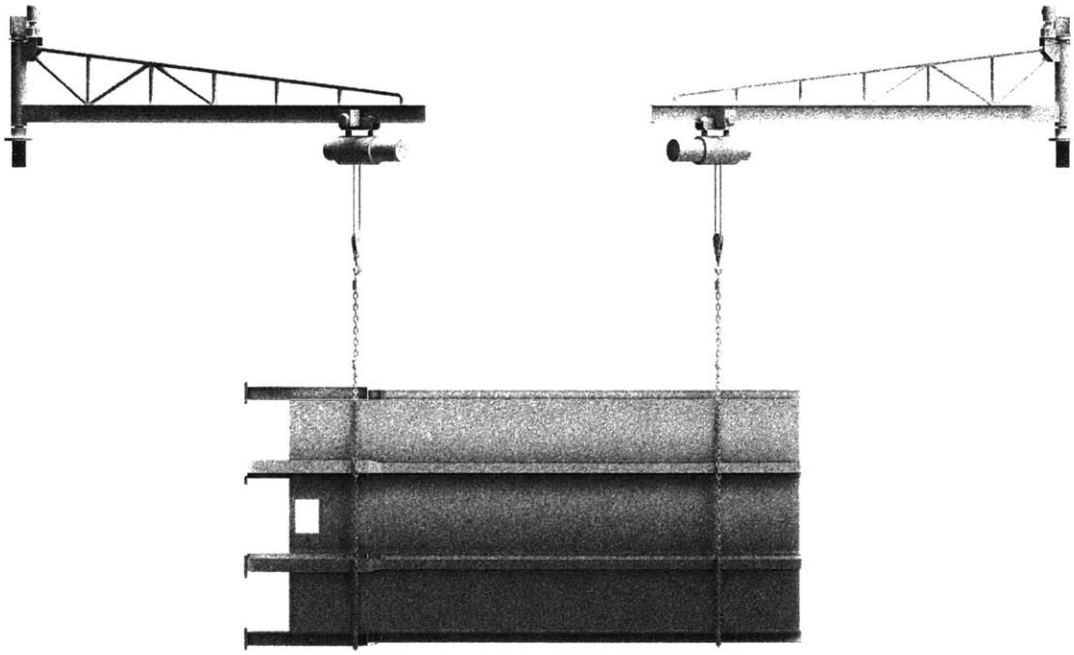


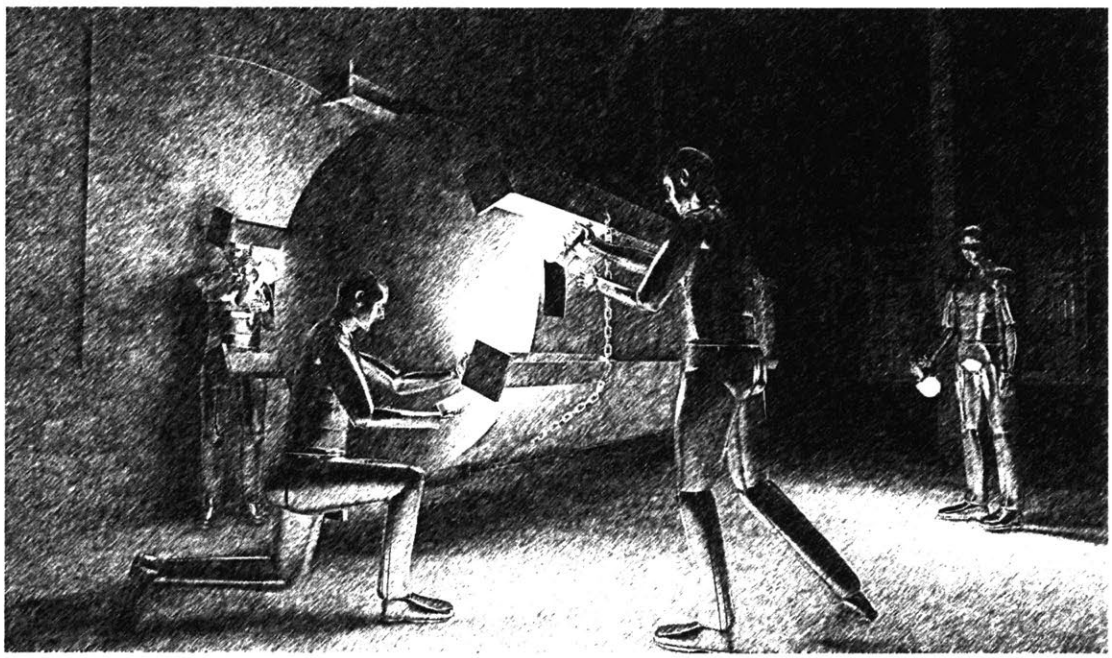


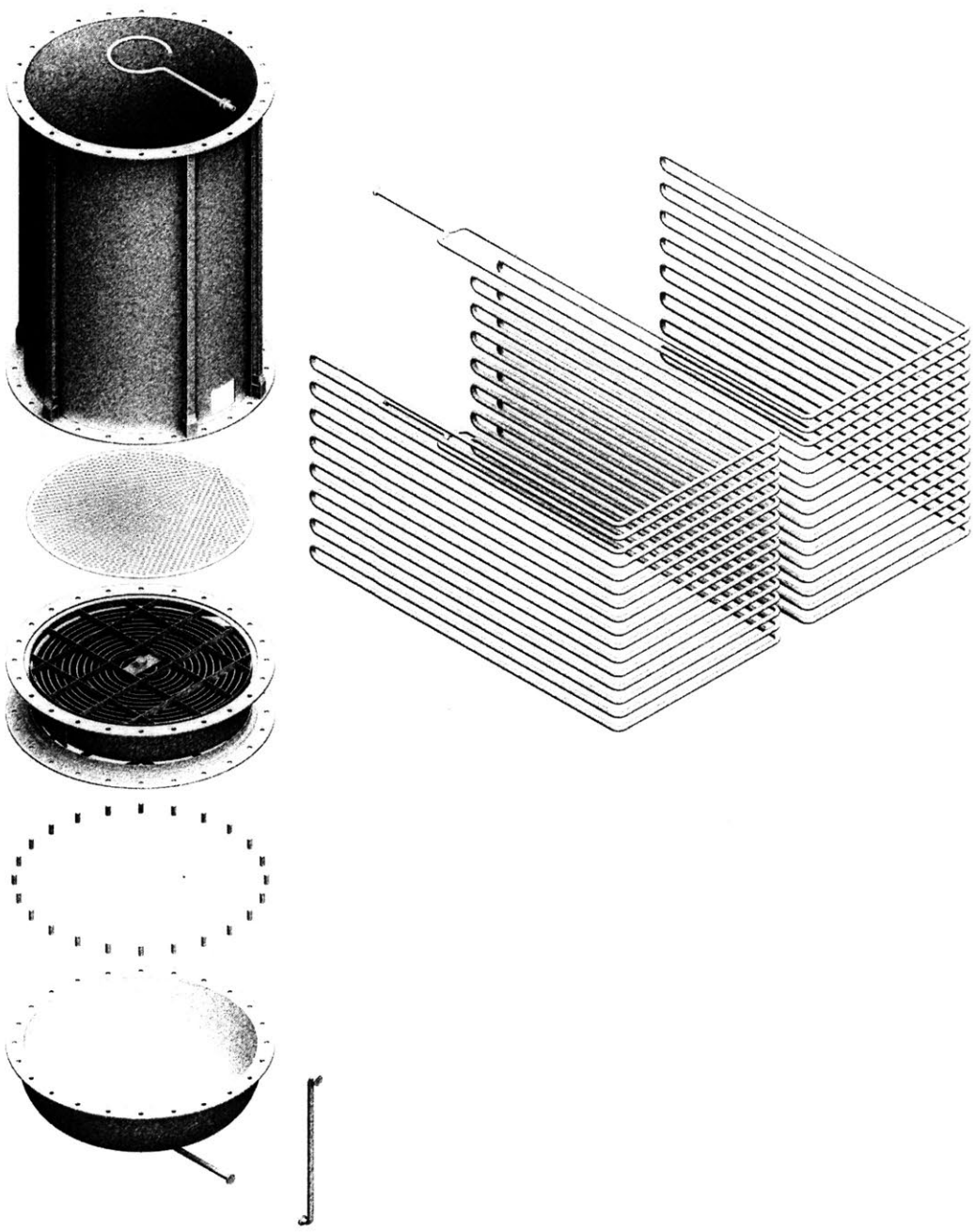


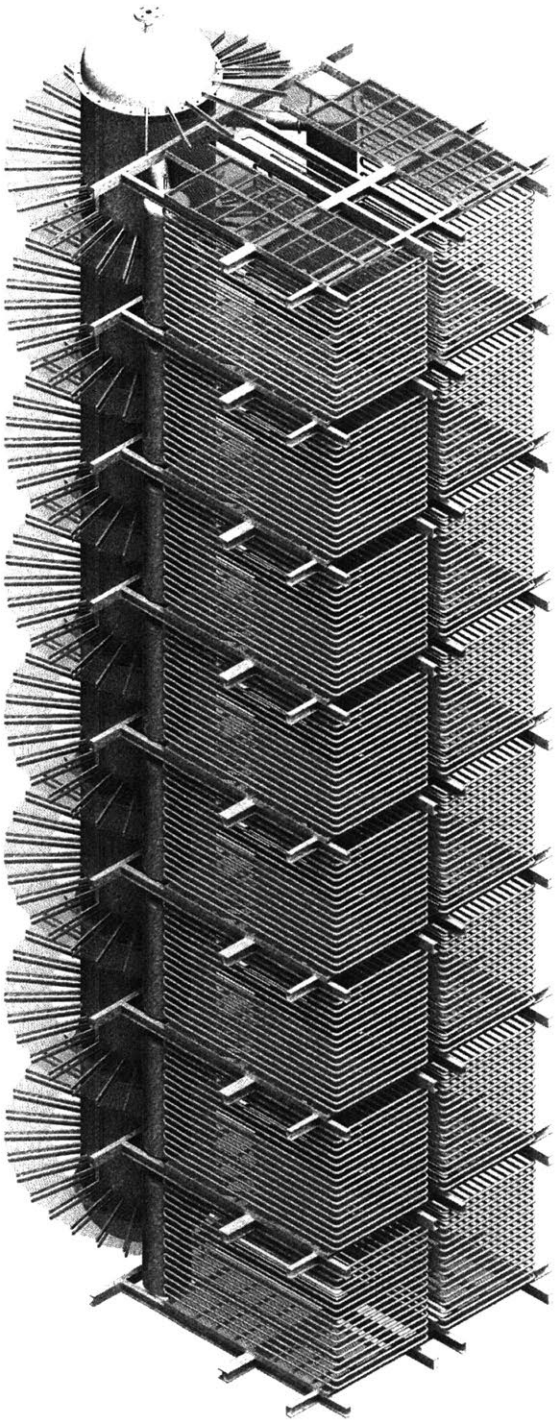


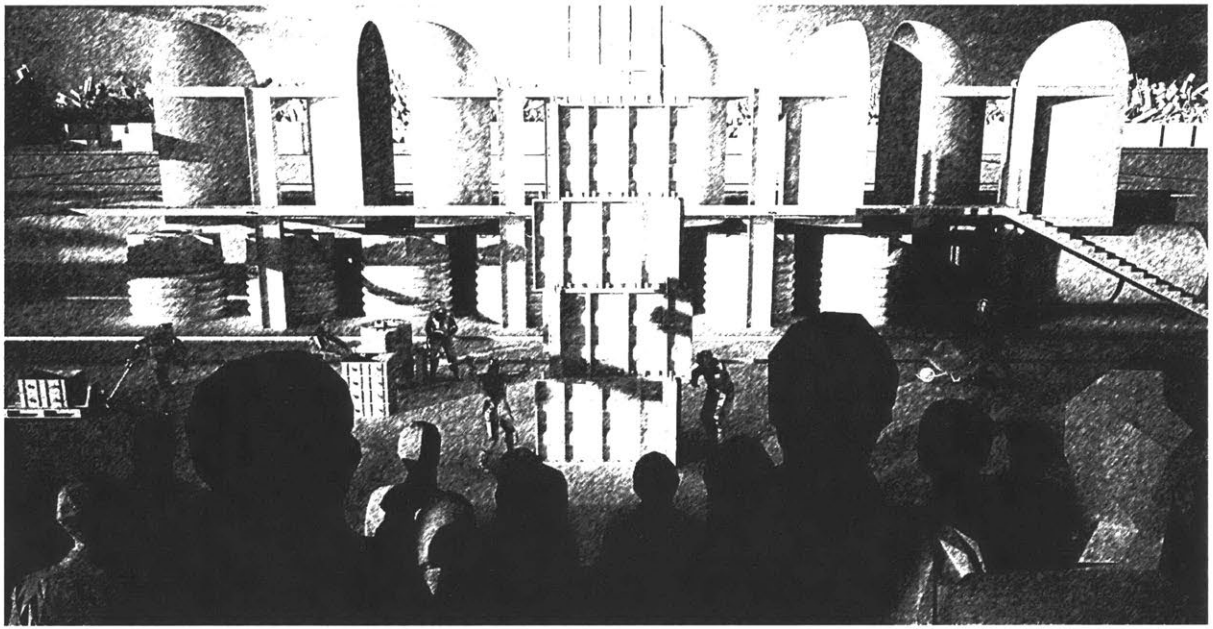






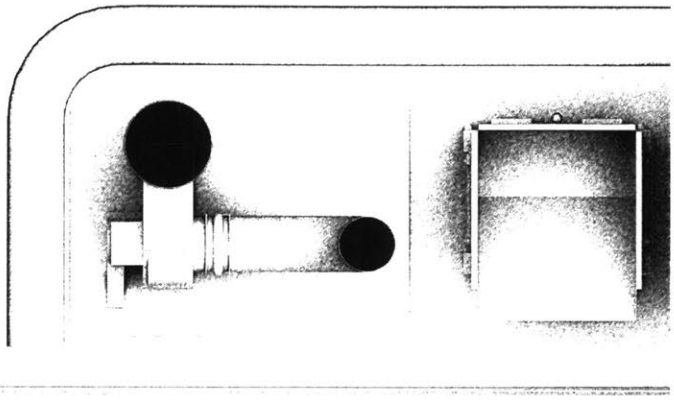


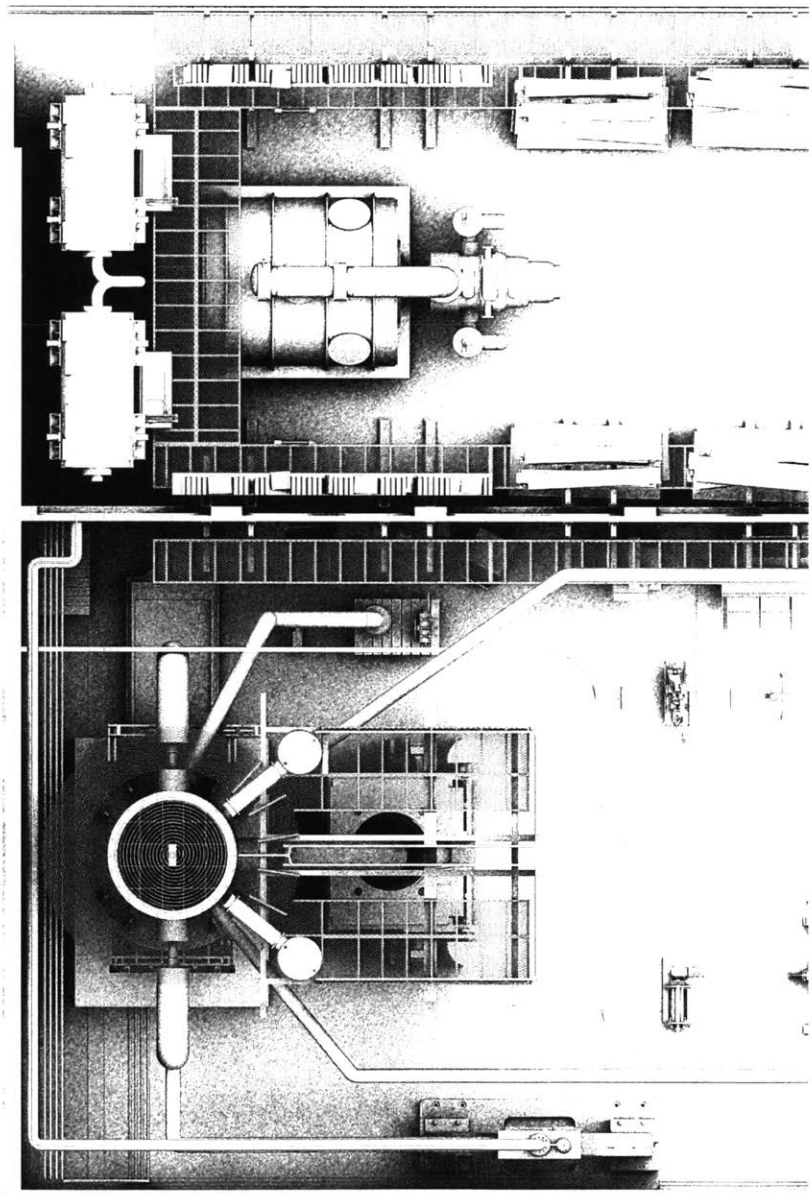


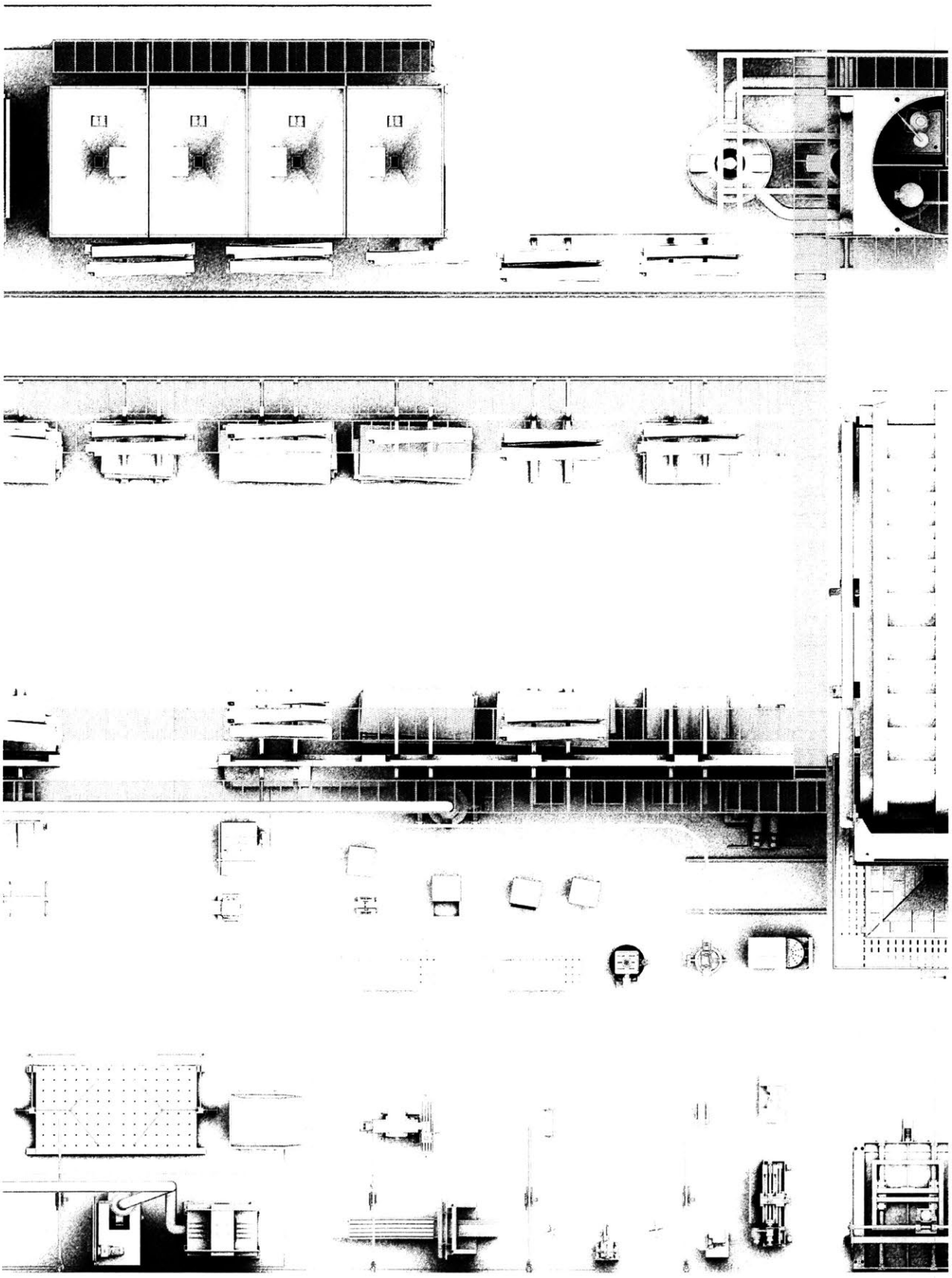


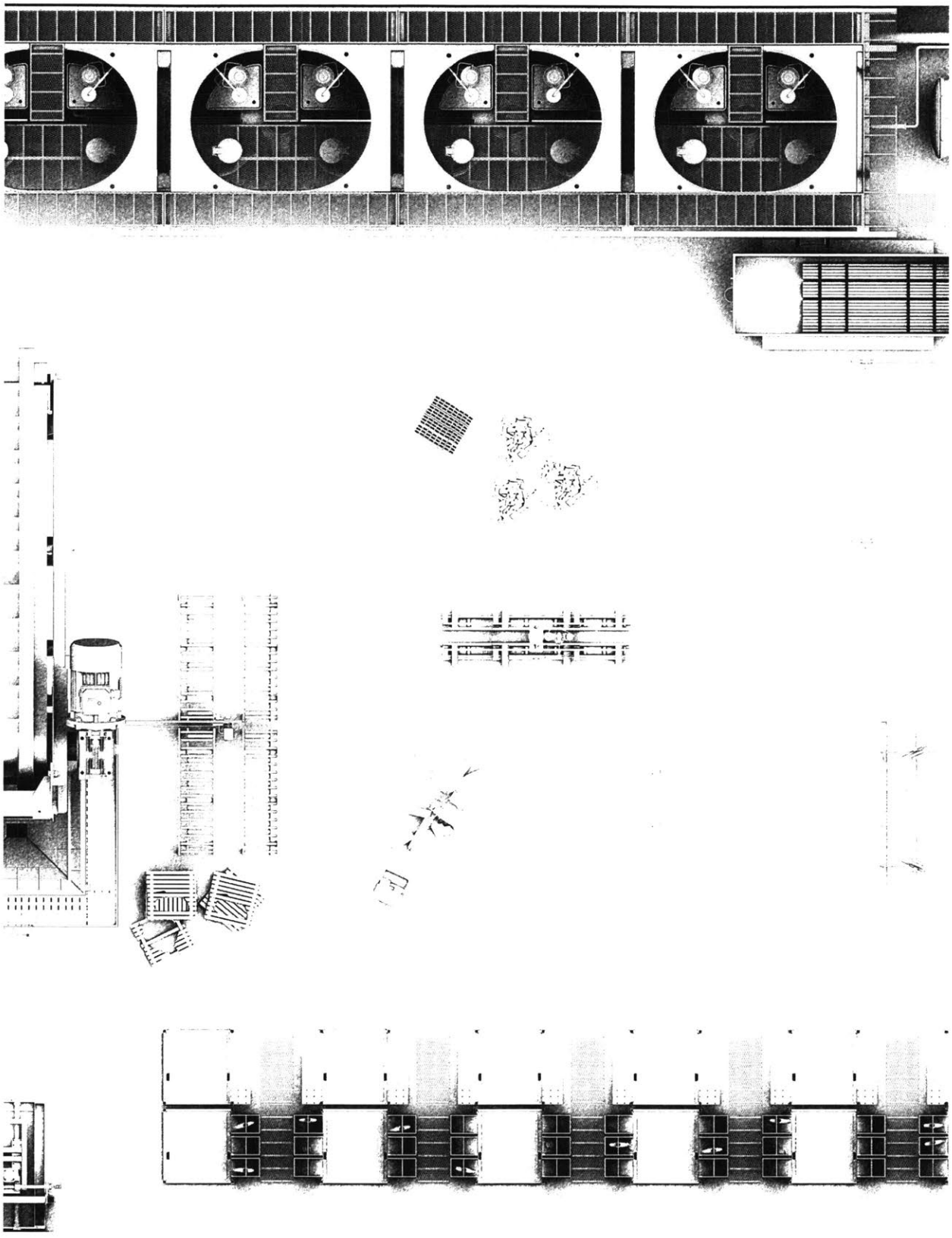
Plan
of the
Monastery

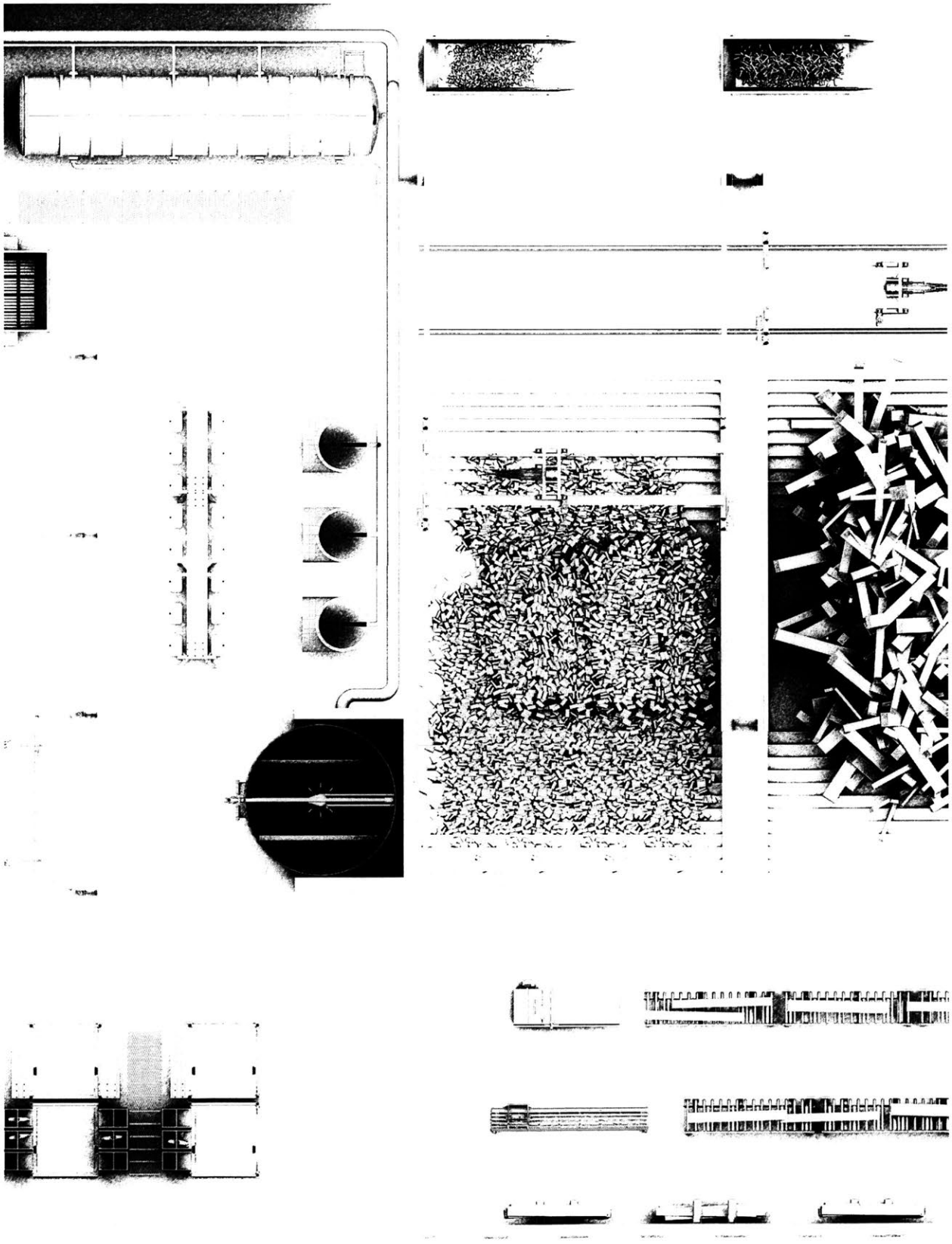
1:125

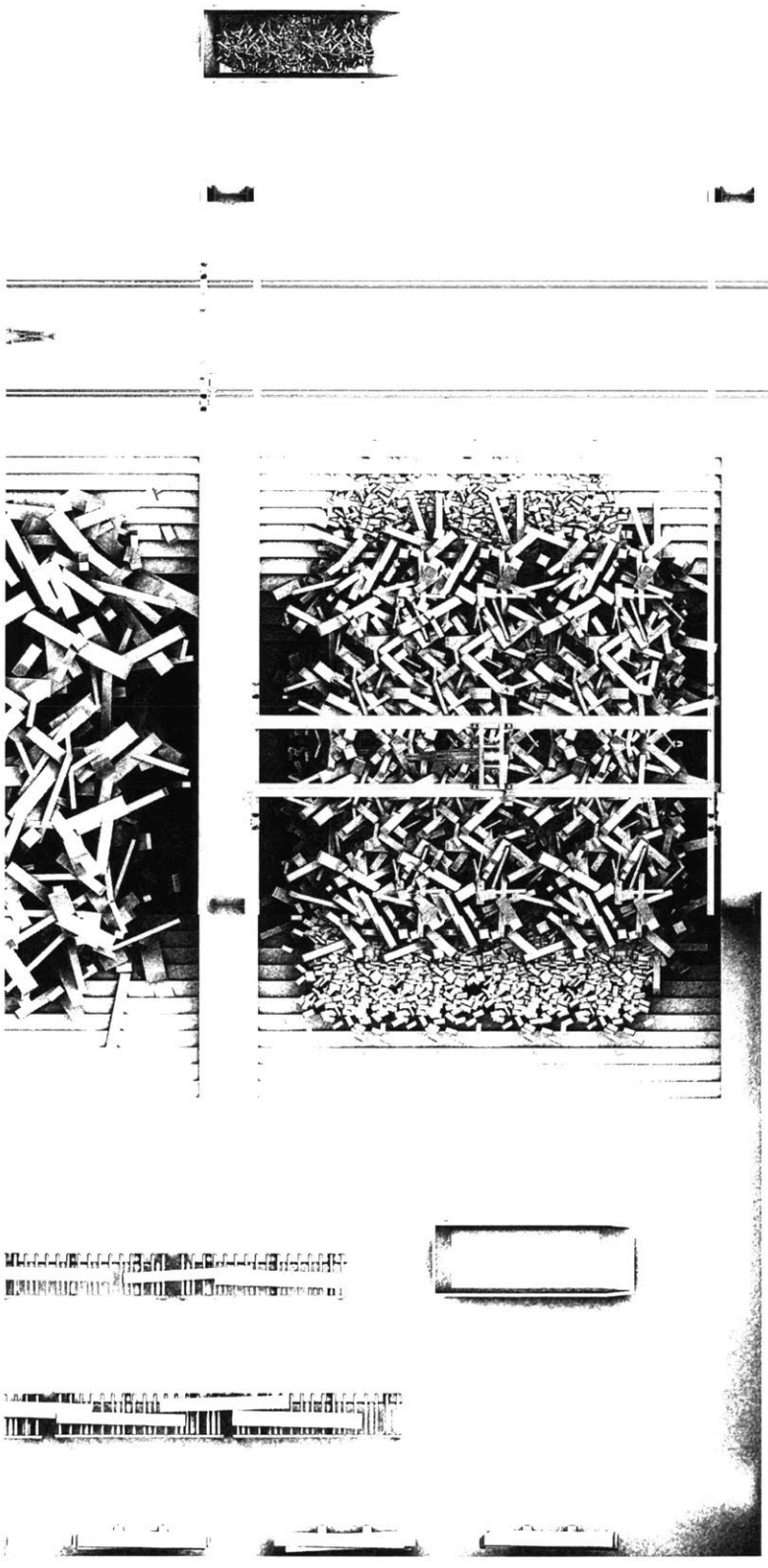


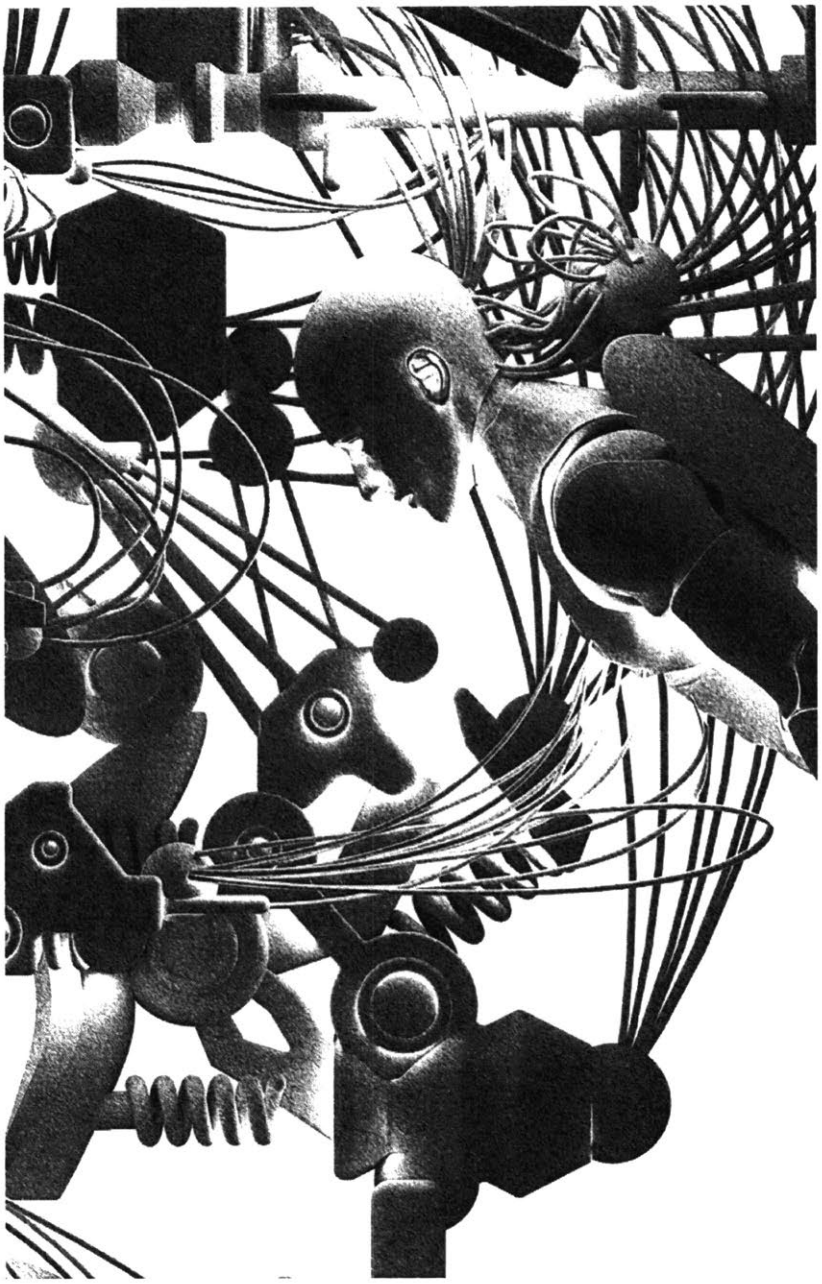












Appendix

Thesis Defense

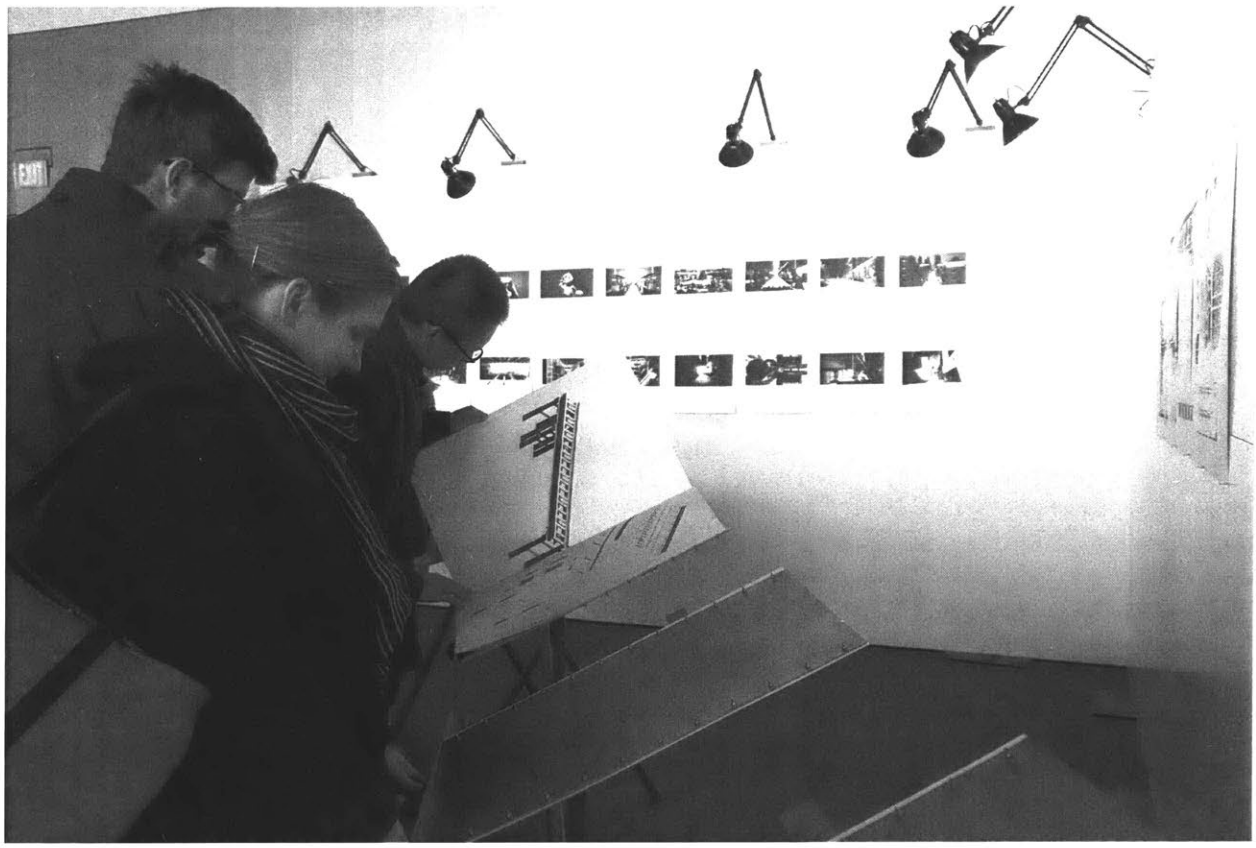
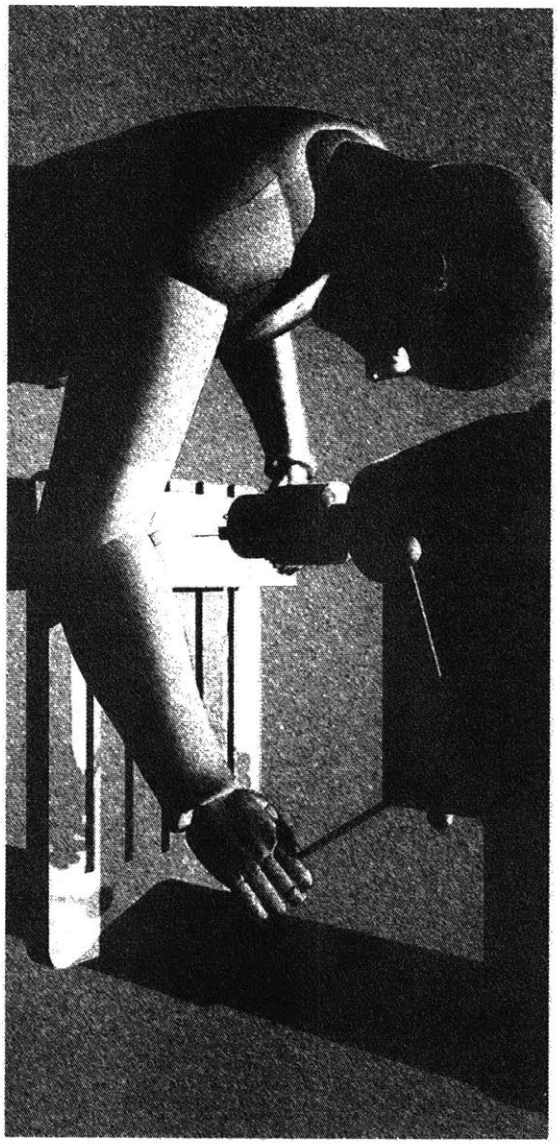

EXIT

Photo Taken By Sarah Wagner

Photo Taken By Sarah Wagner



Appendix

Notes

> "In this case, all that need be said is quite simply that we are dealing with techniques of the body. The body is man's first and most natural instrument. Or more accurately, not to speak of instruments, man's first and most natural technical object, and at the same time, his first technical means, is his body."[1]

As a late 19th century sociologist, Marcel Mauss extends a call for the consideration of bodily movements in what is termed habitus, the collection of dispositions, culturally, educationally, and psychologically rooted. Before the tool and out of which tools are borne are the movements and characters of the body. In addition to the forces of the environment are those of the body. Habitus provides the framework for organizing tools, that is, the motions associated with tools and the manner in which the body is engaged.

What Reuleux formulates in the pairing of elements to produce kinematic chains in machines, Mauss postulates as originating in the body itself.[2] The techniques of activity culminate in three forceful movements, pushing, pulling and lifting, representing the beginnings of a framework for the kinematics of the body. Basalla structures the development of tools in evolutionary or darwinian terms, beginning with stone tools, which bear striking resemblance to later tools produced in iron. That the forms and motions of engagement of early stone tools persist in contemporary tool kits support the consistent presence of the body. However, the discourse about tools encompasses more than its use and formal transformations, its presence in the imaginary and its relation to ritual practice is pertinent. Complicit with how a tool is used is the idea of what it means in defining an ontology.

This thesis seeks to elaborate the relationship between human, material and technology through a deep understanding of what it means to use tools. The very beginnings of technology and simultaneously material culture occur in lithic manufacture by early hominids when one stone was struck against another in order to produce a symmetrical cutting tool, the bifacial stone axe. Hafted or not, it could be gripped by the hand and used for cutting; being among the first use-objects. A tool's definition by use is surfacial, it is necessarily entangled in defining ways of being in the world. Tools define ontology, by facilitating an imagined intent to affect the material environment, and by engaging the body in a motion towards that intent. The tool transforms inwardly and outwardly.

Wynn posits the role of tools as originating from the imagination and forming a necessary part of our evolution.

> "The most revealing of the artefacts is the handaxe, a tool whose shape requires some rather sophisticated Euclidean and projective relationships. Most obvious is symmetry. Piaget has argued that symmetry (true symmetry is extremely rare in nature) is never passively perceived but must be actively constructed." [3]

[1] Marcel Maus,"Techniques du Corp," Journal de Psychologie 4th ser., 32, no. 3 (March 15, 1934): 461.

[2] Franz Reuleaux, Kinematics of Machinery: Outlines for a Theory of Machines (London: R Clay, Sons, and Taylor, Printers, 1876), 501.

[3] Wynn, Thomas. "Piaget, stone tools and the evolution of human intelligence." World Archaeology 17, no. 1 (June 1985), 37.

In the minds of early hominids, the invention and use of tools involved a speculated and projected idea, and an extended interaction with material. Tools help us make sense of, extract from, and refine our material environment, in order to create cultural artifacts, in Wynn's specific example, to produce a symmetrical object. Artifacts of material culture are the result of a transformation or sequence of transformations of a raw material into something designed, embodying intent, and exhibiting human intervention. This transformation occurs through the use of tools.

To elaborate the notion of transformation, Heidegger provides some definitions. First in questioning the essence of technology, four causes are identified, of material, form, utility, and manufacture. That they are all means of "occasioning" that interplay is of relevance, but that they are all implicit in the definition of technology is critical. If these modes of occasioning float alongside one another, their orchestration towards an end, is what Heidegger describes as a "bringing forth" or "revealing." This idea of technology that reveals is embodied in the definition of technology itself as Heidegger demonstrates.

> "The word [technology] stems from the Greek. Technikon means that which belongs to techne. We must observe two things with respect to the meaning of this word. One is that techne is the name not only for the activities and skills of the craftsman, but also for the arts of the mind and the fine arts. Techne belongs to bringing-forth, to poiesis; it is something poietic.
> The other point that we should observe with regard to techne is even more important. From earliest times until Plato the word techne is linked with the word episteme. Both words are names for knowing in the widest sense. They mean to be entirely at home in something, to understand and be expert in it."[4]

Technology is defined in techne as a revealing or bringing forth, the very vehicle of knowledge creation. Technology is therefore heuristic and transformative, it is a means to make sense of what the world is, and provides a capacity for imagination projection, i.e. what the world could be, to be brought forth. Scarry provides further commentary on the role of technology, that is, the place of the tool within the triad of Work, Tool and Artifact. The tool is the record of connection between material and worker, that translates sentience, and permits projection. It therefore sits at the critical juncture of intention.

> "This special position of the tool becomes more apparent when the work is seen within the framework of intentionality: work is an intentional act. [The tool] belongs to the body and is an extension of the human hand; it is also itself an object which must itself be made before it can participate in the making of other objects. The tool, then occupies a remarkable position within the intentional frame. In almost all intentional states other than work, the connection between act and object is invisible and magical signalled only by a preposition (the of and for).

[4] Martin Heidegger, The Question Concerning Technology and Other Essays (London: Garland Publishing 1977), 12.

> In work the locus of the connection becomes for the first time palpable and concrete in the tool. Across its concrete surfaces the interior act and the exterior object become continuous; the (of and for) themselves become subject to direction and control."[5]

The two levels of projection are transformations: first from an invisible aspect of consciousness to a visible but disappearing action, the second from the disappearing action to an enduring material form. In the translation of sentience from the worker to the artifact, Scarry posits is the first social action. If, as Heidegger demonstrates, the tool (and by extension technology) brings forth, and provides a way of knowing, then the making of an artifact provides an object of collective engagement, of knowing each other.

> "The making of an artifact is a social act, for the object is intended as something that will both enter into and itself elicit human responsiveness. Through tools and acts of making, human beings become involved in each other's sentience."[6]

From Arendt's binaries of work and labour, come a binary of objects, one of contemplation, and of consumption respectively. Here, 'work' defines the efforts of humankind to produce objects of durability, that can be used, that sustain contemplation and exist beyond natural necessity.

> "Work and its product, the human artifact, bestow a measure of permanence and durability upon the futility of mortal life and the fleeting character of human time."[7]

It is immediately apparent from Arendt's definitions work has direct connotations to the public realm, for it implies the transcendence of life itself, durability beyond a single human life necessarily implies notions of commonality and politics, something the products of consumption cannot claim. To that end the public is constituted of artifacts of contemplation, the products of work and of the fabricator homo faber.

> "Second, the term "public" signifies the world itself, in so far as it is common to all of us and distinguished from our privately owned place in it. It is related to the human artifact, the fabrication of human hands, as well as to affairs which go on among those who inhabit the man-made world together. To live together in the world means essentially that a world of things is between those who have it in common, as a table is located between those who sit around it; the world, like every in-between, relates and separates men at the same time." [8]

[5] Scarry, Elaine. The body in pain: the making and unmaking of the world. New York: Oxford University Press, 2006, 198
[6] Ibid. 197
[7] Arendt, Hannah, and Margaret Canovan. The human condition. Chicago: University of Chicago Press, 2012, 8.
[8] Ibid. 52

Within the realm of public and private the instrumentality of the tool and of technology changes, where in the realm of private, the tool is used by the labourer to ease the pain of labouring, that is to enhance human effort, to this end the tool is the only material thing that survives the world of the private, the cycle of consumption and production, and is an instrument of subjugation to which the animal laborans, that ideal of all laborers, is necessarily enslaved. Put another way, the technologies that guarantee our existence admit a kind of conditioning, that which we cannot do without. The instrumentality of work assumes a different character altogether, for work can only occur in humankind that is freed from the necessities of its own existence. Whereas the labourer is tied by necessity to the tool, the worker is free to produce tools and works, and is a slave to neither.

> "Unlike the tools of workmanship, which at every given moment in the work process remain the servants of the hand, the machines demand that the labourer serve them, that he adjust the natural rhythm of his body to their mechanical movement. Even the most refined tool remains a servant, unable to guide or to replace the hand. Even the most primitive machine guides the body's labor and eventually replaces it altogether."[9]

Given now that the fabricator is the producer of worlds and with tools is free to produce works, the question of intent and direction enter immediately. For Scarry alludes to the human artifact as a political object, and Arendt fixes it temporally before us, the world of homo faber is in some way a linear movement between means and ends. To arrive at meaning is to permit the political dimension of work to become its measure, urging the product of work, the human artifact, from the nihilism of technology.

> "Acting and speaking men need the help of homo faber in his highest capacity, that is, the help of the artist, of poets and historiographers, of monument-builders or writers, because without them the only product of their activity, the story they enact and tell, would not survive at all. In order to be what the world is always meant to be, a home for men during their life on earth, the human artifice must be a place fit for action and speech"[10]

[9] Ibid. 147
[10] Ibid. 173

"I went to the workshops, as timid as an apprentice, looked up respectfully to the man in the blue apron, and asked him to share his secrets with me. For many a piece of workshop tradition still lay there, bashfully hidden from the eyes of the architects. And when they realized what I wanted... [they] revealed their carefully concealed tradition. I found modern paneling in the cladding of the old lavatory water tanks, I found a modern solution for the problem of corners in the chests of silver cutlery, I found locks and metal fittings on suitcases and pianos."

Loos (Architecture 1910)

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