APPLYING WORK SIMPLIFICATION
TO THE RESTAURANT INDUSTRY

by

Bruce Wood Baldwin

Submitted in partial fulfillment of the
Requirements for the degree of
Bachelor of Science

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

1960

Signature of Author

Signature redacted

School of Industrial Management

Certified by

Signature redacted

Faculty Advisor of the Thesis
Letter of Transmittal

Professor Philip Franklin
Secretary of the Faculty
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Dear Professor Franklin:

In accordance with the requirements for graduation, I herewith submit a thesis entitled: "APPLYING WORK SIMPLIFICATION TO THE RESTAURANT INDUSTRY".

Sincerely yours,

Signature redacted

I would like to express my thanks to Harry Schreiber, Jr., whose leadership stimulated the situational thinking that is required in this typed analysis.
ABSTRACT

TITLE: Applying Work Simplification to the Restaurant Industry
By: Bruce Wood Baldwin

Submitted to the School of Industrial Management on May 23, 1960, in partial fulfillment of the requirements for the degree of Bachelor of Science.

The purpose of this thesis is to evaluate the effectiveness of Work Simplification concepts in their application to the restaurant industry. The investigation was conducted as a field study, experimenting with a program installation in a specific restaurant.

The similarity of the "depressed" personnel situation, and its degenerative effect on the economic situation, from restaurant to restaurant, is expressive of the need for the Work Simplification improvement approach in the restaurant industry. The foremost objective of the program was to formulate a plan of action that would yield elimination of the "cause" factors of the restaurant's problem situation.

A method for restaurant program application is suggested. What actually happened in program derivation and in its installation is described. And the program's leadership and engineering techniques are evaluated.

Title: Instructor
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Chapter I
Basic Concepts

The purpose of this paper is to apply the Work Simplification approach to a specific restaurant, and then evaluate its effectiveness in ameliorating problem situations in the restaurant industry. Just as the designers created the program to combine the motivational techniques of the social psychologist with the productivity techniques of the industrial engineer, this thesis must consider both the personal development of the restaurant people involved and the development of restaurant technology as the variables for discussion.

An organized improvement approach, one that would stimulate "positive" thinking and action, is a basic need of this industry. Typically the restaurant manager functions both in line and in staff capacities. His time is spent almost entirely in keeping even with the daily personnel problems, leaving little time for improving management. The intensity of the personnel situation, and its similarity from restaurant to restaurant has created a false impression of its constancy to the system. Changing this impression will become the first step in the program.

In formulating the improvement approach, we must first ask, and then answer the following questions.

1. What are the economic problems?
   a. Increasing cost of food
   b. Increasing cost of labor
   c. "Bad Will" associated with increasing menu prices
   d. Easy entry into the industry (strong competition)

1. Whyte, W. F., Human Relations in the Restaurant Industry
2. What effects do these create?
   a. A very thin profit margin
   b. A high restaurant mortality rate

3. What are the personnel problems?
   a. High labor turnover rate
   b. Dwindling number of "professional" service people
   c. Constant breakdown of interdepartmental communication and coordination.

4. What effects do these create?
   a. Little time left for real improvement management
   b. Deficient job attitudes
   c. Little cooperation
   d. Poor service to the customer

5. What is the restaurant's business function?
   The restaurant is both a manufacturing and service facility. The raw materials are modified, assembled, advertised, sold, and serviced within the same building.

6. What are the causes of functional breakdown?
   a. Customer demand is levied directly on every employee (due to the multifunctional business setup).
   b. Uneven employee work loads, associated with mealtime tension periods
   c. No direct lines of authority between departments, only status level authority
   d. Lower status level people "originating action" for higher status level people
   e. Low prestige value associated with restaurant service occupations
   f. Little chance for employee advancement from within one

---

2. Whyte, W. F., Human Relations in the Restaurant Industry
Analysis of the situation in terms of the Work Simplification approach:

The typical restaurant is a small, non-bulky organization. (A discordant, "family" organization.) And each employee position animates the business function. How can we make this organizational setup help us in our improvement objectives? In effect, we should attack the prime "cause" variables of the personnel situation, in lieu of worrying about the situation's effects.

Our improvement objective might be to develop the employee's recognition of everyone's importance to the business function, and his motivational desire to match his own importance with ability. If this development is executed in terms of a methods improvement program, we in effect have a two-fold profit.

Increasing dollar volume of business, and generation of cost efficiencies are the overall economic objectives of the program. Favorable word of mouth advertising creates a prosperous restaurant. But the amount of favorable word of mouth advertising is based on the quality of the menu's makeup, the quality of the service, and the desirability of the surrounding atmosphere. And, all this depends on the employees. One malignant functional segment can quench management's economic hopes. "It is at these low levels, where ultimate authority resides, that personnel decisions determining the willingness to contribute become of relatively greatest aggregate importance."

Positively motivated employees are management's most valuable assets.

The Work Simplification program employs the consultative leadership approach. The employee is involved in the improvement process, and participates in problem solution work. Any derived preferred solution is in part his own, and he is therefore more than willing to

3. Barnard, *Functions of the Executive*, p. 192
experiment with its installation. Work Simplification applications have also demonstrated the fact that the people closest to any job are the most familiar with the problems of that job.

While working within the pattern of the Work Simplification approach, it is certain that management people will originate most of the usable ideas. It is also accepted that management will always retain complete control over the ultimate, decision-making process. But management's ability to manage is only useful when it evokes employee cooperation.
Chapter II

Description of the Restaurant Under Study

1. The Restaurant:
   a. Located in a small industrial city in New Hampshire
   b. Complete "New England" style menu
   c. Caters mostly to business and professional people, shoppers, and tourists
   d. Maximum capacity equal to about one hundred customers
   e. Organizational and status level makeups are given on the following page
   f. Structural design is given in appendix three.

2. The Problem Situation:
   The problem situation is essentially the same as that described in Chapter I. But there is one non-typical factor that should be examined.
   Turnover rate, status level friction, and communication and coordination breakdown are typical in form in this restaurant, only exaggerated in magnitude. A closed-end labor supply creates the multiplicative effect. Restaurant employees do "float" from one job to another, but usually remain within the same general area. Any major relocation would most likely come as a move from a small to a large city. The city in question is small, and it is located far enough away from any major area that the probability of significant influx of restaurant employees is negligible. The initial shortage of experienced employees amplifies the binding effect. And management was found to be truly spending most of its time keeping even with the personnel problems.
Organization Chart

- General Manager (Gen Mgr)
  - Assistant Day Mgr.
  - Assistant Night Mgr.
    - Baker
    - Accountant
  - Head Counter
  - Hostess
  - 2nd Cook
    - Night Cook
      - Counter Waitresses
      - Dining Room Waitresses
      - Dishwashers
      - Porter
Status Level Chart

Management

Chef

Accountant

2nd Cook

2nd Cook

Night Cook

Hostess

Head Counter

Baker

Waitresses

Dish Washers

Porter
Chapter III

Plan of Action

This chapter presents the procedure followed in the program installation. The method is essentially the same as that presented by A.H. Mogensen, L.M. Gilbreth, E.H. Schell, H.F. Goodwin, and D.B. Porter in their "Three Phase" article. Therefore, the description will be given in outline form, but one procedural modification will be examined.

Plan of Action

I. Initial Management Involvement Discussions
   A. Appreciation Session
      1. Evaluation of the restaurant's need for the program
      2. Evaluation of the program's objectives
      3. Stimulation of the leadership philosophy (Peg Board)
      4. Evaluation of program requirements
   B. Pattern Session
      1. Presentation of the five-step pattern
      2. Evaluation of the organized approach to improvement
   C. Engineering Sessions - Applicability and Evaluation of
      1. Flow process chart
      2. Flow diagram
      3. Multiple activity chart
      4. Operator chart
      5. Movie camera
   D. Problem Discovery Session
      1. Compilation of a list of problems for possible project work
      2. Re-examination of the organized approach in terms of specific jobs for improvement

II. Design of Employee Involvement Approach
   A. Evaluation of the problem situation
   B. Evaluation of time element limitations
      1. Uneven work load situation
      2. Turnover rate problem
      3. Employee "Development" requirements
      4. Thesis requirements

III. Communication to Employees
   A. What the program was about
   B. What was hoped to be accomplished
IV. Management Project Activity
   A. Selection of jobs to improve
   B. Compilation of facts
   C. Suggested approaches
   D. Development of preferred solutions

V. Employee Involvement (By department, on the job, during slack periods)
   A. An expression of management's need for their help in the improvement process
   B. Actual involvement in project activity
      1. Problem discovery
      2. Selection of a job to improve
      3. Suggested approaches
      4. Development of preferred solutions
      5. Installation of improved methods

VI. Recognition for Employee Participation
   A. Word of mouth acknowledgements
   B. Movies

VII. Further Employee Development
   A. Appreciation for leadership philosophy
   B. Education (geared to ability) in the use of the descriptive tools

VIII. Combining Departments in Project Activity
   A. Installation of management's preferred solutions
   B. Joining different points of view

IX. Revision of Plan whenever Necessary
Procedural Modification - Employee Involvement

The problem situation presented in the first chapter suggested the job oriented, motivational under development of the restaurant employee. The program was oriented about this fundamental. The idea being to first have them sense the feeling of accomplishment and pride derived from project involvement, and then, introduce them to the philosophy and engineering development.

In the project involvement stage, departments were treated separately, thereby eliminating any chance for "status level" confliction. And with a successful first stage, turnover rate should be reduced, leaving the way open for educational development. If a high enough development is achieved, so that departments could be combined in project activity, communication and coordination problems could be greatly reduced.
Chapter IV

Observations on Management's Reaction to the Program

The appreciation and educational discussions, with the pegboard demonstration and the "red and green light" gimmicks stimulated the desired result. Management convinced themselves of the usefulness of, and the need for, the Work Simplification approach. But as we moved on into actual project work, that old red light got turned on again. The personnel problems, again, became constants of the system. And therefore, positive thinking in project activity was nearly terminated.

The reaction pattern was normal, and should have been expected and planned for. The principles of the peg board were overshadowed, in the intervening weeks by the effects of the day-to-day struggle with the personnel situation.

The resulting plan of action was to immediately involve the employees in team improvement work, hoping to secure quantitative results that would rebuild management's confidence.

Problem Areas Delegated for Improvement Management

This section presents an outline of what management came up with in the "Problem Discovery Session".

I. Problem Areas
   A. Communication and Coordination between Departments
   B. Marketing Considerations [How to increase dollar volume of business]
   C. Production and Handling of Food [Kitchen, Pantry, Counter]
      1. Prediction of daily food consumption
      2. Inventory control procedure
3. Waste control procedure
4. Standardization of portions

D. Service Methods [Kitchen, Diningroom, Counter, and Pantry]
   1. Flow process
   2. General layout
   3. Employee scheduling
   4. Prediction of daily customer count

E. Dish Washing
   1. Methods
   2. Employee scheduling
   3. Flow process
Chapter V

Observations on Employee Reactions to Involvement

Initial responses to involvement expressed both enthusiasm and resistance. One supervisor felt that the philosophy sounded good, but indicated that there were "some people who would never cooperate" (people in other departments). A resistant dishwasher, half-jokingly, described a more enthusiastic comrade as a "traitor to their side". It was interesting to note that later, this same girl was the most eager to help set up the equipment needed for experimentation with a solution idea. But, actually, this evolution, or development, was typical. Regardless of initial response, everyone wanted to improve when they saw they had the opportunity.

Observations:

1. The first jobs they designated for improvement were ones that had always been problems, and should have been cleared up long ago. For example, the dishwashers solved the "streaked" glass problem by pointing out that they had used separate glass washers in the past. Glasses were presently being washed in the regular dishwasher, employing a longer wash time. This method produced about a 10% defective rate, and therefore, a constant bone of contention between waitresses and dishwashers. Apparently, the glasswashers were being rewired when the restaurant's ownership changed hands, and they were pushed aside in the ensuing disorder. The solution had always been right at hand, but never a job atmosphere that would illuminate it. This same observation was fairly typical of all initial
project work.

2. Everyone enjoyed participating, and were more than willing to help in the fact finding process carried out within management's project activity.

3. They had some good suggestions
   a. A combination coffee, water, and relish stand that would save the diningroom waitress one hundred feet of walking per table
   b. An advertising idea
   c. Waste control methods
   d. Rearrangements of work space layouts
   e. Systemization methods

4. They were most adept in working with changes in work space layouts. This type of analysis, in the restaurant, contributes to the improvement of service methods. And, the "service" employee would normally think in terms of service improvement when involved in the improvement process.

5. They are not developed yet to the point where they would do any improving on their own. And since the development process has temporarily been stopped, (in order to write the thesis), the level of development has returned to the original state. Continual leadership influence is needed for the maintenance of the improvement atmosphere. Just how long a development process is needed to stimulate employee leadership ability has not been determined, but certainly, it will not be a short process.
Chapter VI

Conclusion

The declining rate of management involvement progress indicated
a need for a re-evaluation of the total situation. And the plan of action
was changed to have the employees immediately involved in improve-
ment work. Management project activity, and therefore, companywide
improvement work, would not be accelerated until quantitative results,
demonstrating employee cooperation, were presented.

When the employees were involved in project work, it was found
that they enjoyed it, that they wanted to help, and that they had good
ideas. As within the typical "manufacturing" Work Simplification
program application, employee cooperation and job motivation are
stimulated through satisfaction of both their "ego" and their "self-
fulfillment" needs, and company profits are increased through methods
improvement. But there is one additional benefit in the restaurant
application. Any improvement in service, food handling, or food
production methods would also reduce the chance of having mistakes
in communication and coordination committed between departments.
Therefore, while the involvement philosophy removes status level and
prestige "causes", methods improvement eliminates the agency that
usually sets off the chain reaction of rekindled grievances typical of
the restaurant personnel problem.

It is evident that this segment of the organized approach can be
profitably applied to the restaurant situation. But engineering technique

application must also be examined.

I. Plant layout and flow diagram analysis have the most important application in the restaurant improvement program. With these tools the restaurant manager can easily describe and analyze the path of service flow. Unfortunately, restaurant equipment, and certainly the structural makeup of the building, once it has been established, is permanent. This indicates the necessity of creating this type of improvement on paper, before the fact. The restaurant manager, the architect, and the industrial engineer, working as a team could really save the big money. If the restaurant has already been constructed, improvement in counter, kitchen, pantry and dining room work space layouts become the criteria for improvement research.

II. It was found that the complexity of dining room queuing line theory \(^6\) rendered actual model solution out of the question for this thesis. But the qualitative information generated by the analysis of model assumptions and actual service time distributions can be put to profitable use. The points of interest were as follows:

A. Service time per customer varies
   1. Inversely with the number of waitresses and cooks who are working
   2. Directly with the number of customers who are already being serviced [and the number of customers per table.]
   3. Inversely with the amount of worker collaboration.

B. An Erlang variation in service time distribution (lunch time only)

C. A periodic, quadri-modal frequency of service time distribution (lunch time only).

---

6. See Appendix I for Assumptions and Definitions
This information demonstrates the importance of examining the modes in the frequency of service time distribution, rather than the overall mean service time. [Just one meal with slow service could be enough to discourage the customer from ever returning.] In normal waiting line analysis we would worry about balancing the number of waitresses and cooks to achieve the most profitable quality of service. In this application, we can improve the quality of service by scheduling worker collaboration.

The original time study data indicated that the modal periods in the frequency distribution were a direct function of the number of customers being serviced at any time, and the number of customers per table at any time. A customer would have a longer service time if he arrived when there were a large number of customers already being served, and if he was a member of a large party of customers.

The suggested idea is to develop collaboration methods both in the dining room and in the kitchen through the use of the multiple activity chart. And then set up a definite schedule for worker collaboration that would give priority to customers who arrive under the least satisfactory conditions.

III. Multiple activity chart analysis can also be used for balancing kitchen workers' efforts with food preparation or dishwashing machining times, and for balancing a waitress' service efforts over a group of tables.

The combined effect of the engineering and leadership techniques is accelerated improvement. Work Simplification supplies the stimulant and the method for improvement-management in the restaurant industry.

This thesis has served as a re-evaluation point for the specific

7. See Frequency Chart for description in Appendix I.
8. Examples are given in Appendix II.
program application. The program plan of action now stands:

1. Continue with employee project activity
2. Formally introduce the employees to the "appreciation" and "education" phases
3. Combine departments in project activity.
Appendix I

Waiting Line Assumptions

I. System under discussion
   A. Diningroom service flow
   B. Lunch hour - from 12:00 to 1:00 o'clock

II. Objectives

   Determination of the most profitable quality of service the restaurant should give.

III. Arrival Rate:

   The number of arrivals per mean service time was found to be random during the lunch hour. Arrival rate would not be random if the entire business day were the period under discussion. The lunch hour was picked because it is the restaurant's busiest meal.

IV. Handling of Calls for Service

   Customers are serviced by the waitress in their order of arrival within each station. And the hostess assigns a customer to the station with the shortest queue. The assumption that service calls are handled in their order of arrival indeed fits the facts of the diningroom situation close enough.

V. Service time definition:

   Let service time = t

   \[ t = \text{time when customer receives his first course} \]
   \[ -\text{time when customer is seated}. \]

   Then "t" equals the time taken for customer satisfaction.

   [This particular definition of service time was arrived at, in order to derive the qualitative information discussed in Chapter VI.]
Note that any entree other than fruit juice was considered the customer's first course.

VI. Problem areas

A. Determining the dollar cost of customer delay

B. The existence of a "Reverse Queue" [the dollar value of the preparation work that the cooks and waitresses have to do]

C. The variation of service time with
   1. The number of employees working
   2. The number of people already being serviced at any time
   3. The number of people per table at any time
   4. The amount of worker collaboration

VII. Points of Interest

A. Erlang service time distribution

B. Quadri-modal frequency of service time distribution

C. Collaboration of employees.
Service Time Distribution

Actual vs. Exponential

12:00-1:00 PM
N = 172
\( s = 9.50 \text{ min.} \)
Examples of possible uses of the multiple activity chart
## Activity Chart

**Operation:** Taking Orders Dining

**Room (Hypothetical):** Present

**Present/Proposed:** Present

<table>
<thead>
<tr>
<th>Date</th>
<th>Observer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Summary of Pieces**

<table>
<thead>
<tr>
<th></th>
<th>Man</th>
<th>Time</th>
<th>Machine</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Busy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waiting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Waitress

- **Sees Customer's**
- **Pours water**
- **goes to table #1**
- **Serves water**

**Time:** 2

- **Takes order table #1**
- **goes to Kitchen**
- **Places order**

**Time:** 2

- **Returns to pantry**
- **Pours water**
- **goes to table #2**
- **Serves water**

**Time:** 3

- **Takes order table #2**
- **goes to Kitchen**
- **Places order**

**Time:** 4

- **Returns to pantry**
- **Pours water**
- **goes to table #3**
- **Serves water**

**Time:** 5

- **Takes order table #3**
- **goes to Kitchen**
- **Places order**
- **Returns to pantry**

**Time:** 6

### Table

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Table 2</th>
<th>Table 3</th>
</tr>
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<tbody>
<tr>
<td>Waits</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Satisfied</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Waits</td>
</tr>
<tr>
<td></td>
<td>Satisfied</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Satisfied</td>
<td></td>
</tr>
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</table>

More than 1 table full of Customers arriving Simultaneously
MULTIPLE ACTIVITY CHART

<table>
<thead>
<tr>
<th>SUMMARY PER PIECES</th>
<th>MAN</th>
<th>MACHINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIME</td>
<td>%</td>
<td>TIME</td>
</tr>
<tr>
<td>BUSY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WAITING</td>
<td></td>
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</table>

Operation: **Taking Orders Dining**

Room: **Proposed**

Date: __________
Observer: __________

**More than table full of customers arriving simultaneously.**

<table>
<thead>
<tr>
<th>Waitress</th>
<th>Time (min)</th>
<th>Table 1</th>
<th>Table 2</th>
<th>Table 3</th>
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<tbody>
<tr>
<td></td>
<td>1</td>
<td>waits</td>
<td>waits</td>
<td>waits</td>
</tr>
<tr>
<td></td>
<td>1.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

- Notices customers
- Goes for water
- Pours all waters
- Serves all waters
- Takes order table # 3
- Takes order table # 2
- Takes order table # 1
- Goes to kitchen
- Places all orders

Part Sketch
OPERATOR

1. Opens machine
2. Pulls out clean
3. Pushes in dirty
4. Closes machine
5. Make ready dirty dishes (cups)
6. Put away clean dishes (plates)
7. Scraps plates to put in another rack (plates)
8. Puts saucers in their rack
9. Puts silver in their rack
10. Throws paper in trash
11. Wipes shelf
12. Etc.

Turns machine on Rinse

Rests

Repeat

TIME

min.

1

2

3

4

Dishwashing Machine waits

Wash

Rinse

Waits (10 sec)
Appendix III

Flow Analysis

Turn the page and look at something the designer of this restaurant did not look at.
**SUMMARY**

<table>
<thead>
<tr>
<th>Operations</th>
<th>Present</th>
<th>Proposed</th>
<th>Saved</th>
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<td>Transportations</td>
<td>14</td>
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<tr>
<td>Storages</td>
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<td>8</td>
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</tr>
<tr>
<td>Inspections</td>
<td></td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

| Total Details | 48 |
| Total Distance |    |
| Total Time |     |

---

**FLOW PROCESS CHART**

Process: Service to One Table

Date: 2/30/60

**NOTES**

- Why go to pantry
- Why not have stands
- Needa tables
- Can combine - by taking orders at other tables at same time if possible
- Might have a Mike in pantry
- Have closer (silver tray)
- Do this before dinners and ready if possible
- Have a water pitcher at hand on stand

---

**DETAIL DESCRIPTION**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Distance</th>
<th>Possibilities</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Sees Customer
2. Goes to Pantry
3. Pours water
4. Brings water to table
5. Gives water to customer
6. Greets customer
7. Asks for orders
8. Waits
9. Takes orders
10. Removes menus
11. Goes to Kitchen
12. Places orders
13. Works at other table (wait)
14. (Gives) extra silver
15. Asks about beverages
16. Waits
17. Goes to kitchen
18. Picks up dinners
19. Brings dinners to table
20. Serves
21. Goes for beverages
22. Prepares beverages
23. Brings beverages
24. Serves
25. Waits
26. Brings water (extra)
27. Serves
28. Waits
29. Returns to table
30. Asks about desserts

---

Subject Charted: Waitress

Charted by: [Signature]
<table>
<thead>
<tr>
<th>SUMMARY</th>
<th>Present</th>
<th>Saved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations</td>
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<tr>
<td>Transportations</td>
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<td>Storages</td>
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<td>Inspections</td>
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<td>Total Details</td>
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<tr>
<td>Total Distance</td>
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<tr>
<td>Total Time</td>
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</table>

**FLOW PROCESS CHART**

**Process**: Service to One Table

**Subject Charted**: Waitress

**Date**: 2/30/60  Charted by

**DETAIL DESCRIPTION**

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Symbol</th>
<th>Possibilities</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Clears table</td>
<td>o</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Takes dessert orders</td>
<td>o</td>
<td></td>
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<tr>
<td>3</td>
<td>Goes to counter</td>
<td>o</td>
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<tr>
<td>4</td>
<td>Prepares desserts</td>
<td>o</td>
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<tr>
<td>5</td>
<td>Brings to table</td>
<td>o</td>
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<td>6</td>
<td>Serves</td>
<td>o</td>
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<tr>
<td>7</td>
<td>Leaves table</td>
<td>o</td>
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<td>8</td>
<td>Waits</td>
<td>o</td>
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<td>9</td>
<td>Makes out check</td>
<td>o</td>
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<td>10</td>
<td>Gives check</td>
<td>o</td>
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<td>Waits</td>
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<td>12</td>
<td>Clears table</td>
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<tr>
<td>13</td>
<td>Returns dishes to table</td>
<td>o</td>
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<tr>
<td>14</td>
<td>Picks up table cloth</td>
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<td>15</td>
<td>Picks up silver</td>
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<td>16</td>
<td>Brings to table</td>
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<td>17</td>
<td>Sets up table</td>
<td>o</td>
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<td>18</td>
<td>Wait</td>
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</table>

**NOTES**

- Make out check right after serving desser
- Make out check right after serving dessert
- Closer
- Combine as many operations as possible - thus reducing steps
- Also combine operations of one waitress with anothers.
Bibliography