To Main Proceedings Document

A System Dynamics Approach to Organization Design: Case of Talented Students' Center in Sharif University of Technology

Hazhir Rahmandad Mahmood Siadat Pazhu
Industrial Engineering Students
Sharif Univeristy of Technology
rahmanra@ind.sharif.ac.ir siaadatp@ind.sharif.ac.ir

Abstract
Despite attracting many sharp students of Iranian high-schools, Sharif University of Technology falls short of developing their potentials to the desirable extent. To face this problem, a new organization within the university is designed which tends to fulfill the following goals: 1- Improve the quality of education for highly talented students. 2- Employ these students' abilities in some useful activities. 3- Provide talented students with better opportunities to continue their education. 4- Enhance successfulness of these people facing the community after graduation.
This organization is designed on the basis of internalizing growth and learning structures in the system. Considering the dynamic aspects in the behavior of the organization we tried to design its structure in a way that the limits to the systems growth are wholly or partially eliminated.

Keywords: Organization Design, Casual loop, Learning Organization, Internalized Growth.

Introduction
Every year, the best students passing the National Universities Entrance Exam (NUEE), enter Sharif University of Technology to pursue their studies in engineering or basic sciences. The statistics show that an average of 270 out of first 500 and 90 out of first 100 students in the National Entrance Exam enter Sharif (Student Affairs Secretary 2000). This talented student base provides the university with a great potential for outstanding performance in different fields.
Unfortunately, the university does not seem to be successful in utilizing this potential. Practically it falls short of educating students in balance with their talents and preparing them for future responsibilities. There is some evidence to confirm this claim:
Our survey shows disappointment and lack of interest to be a common problem in student body. Those entering the university with considerable motivation, become indifferent and motiveless in a semester or two while there is a lack of research atmosphere in the university.
There is a serious tendency among the better students of the university to leave the country for continuing their education and the survey we conducted by "Oval Mapping" process (Bryson, J.M.; Ackermann, F.; Eden, E.; Finn, C.B. 1996) explains one of the important causes to be incapability of university to satisfy students' educational needs.
With the strongest input among all universities of Iran, the output of Sharif hasn't been successful enough in recent years to establish a powerful image in solving community problems.
The inability of Sharif in educating students with the desired standards propounds a serious problem as these students are some of the most important resources of the country.

Problem Definition
To improve the discussed situation, four basic goals are defined, which would tackle the problem from different aspects. These goals are:

1- Improve the quality of education for highly talented students of the university.
2- Employ these students capabilities in some fruitful activities (both scientific and practical) during their education.
3- Provide the talented students with better opportunities to continue their education (inside or outside of Iran).
4- Enhance efficiency of Sharif graduates in solving the problems of the community after

graduation.
Following these goals would approach root causes of the problem. It not only concentrates on improving the quality of education, but also aims to motivate talented students by employing their potentials. Linking the students to the practical problems of the community, prepares them for future contributions while providing graduate educational opportunities for these students, will enforce the academic base of the country in future.
In order to follow the goals, a new organization is to be designed inside the university. This organization can foster the productive movement towards the goals without getting trapped in the inertia of the whole university.
The designed organization should have three important characteristics:
First, it should be capable of fulfilling the discussed goals within its operational structure. This is so simple but still very important to keep in mind why we are designing this organization.
Second, the system designed should be capable of independent growth. Following these goals is a time-consuming effort with no instant output. As a result, we can not expect decision-makers outside the boundary of the system to support the organization for a long time. This is confirmed with the failure of some other governmental organizations, established to attract talented students. Fast changing policies as well as people in charge, would put any organization into trouble, if dependent on any person or system outside its boundary.
Third, this organization should be flexible and capable of continuous learning. It is going to work in a new field and hence it lacks former relevant experience to help the system anticipate and face different conditions. In this situation, internal learning of the organization plays a vital role in adapting itself to different conditions and surviving unexpected dangers.
Our main task has been designing this organization with the above characteristics. Conducting some surveys among strong students of Sharif and investigating the failure of two organizations previously established with rather similar goals (both of the organizations were governmental and for privacy reasons, we couldn't name them here. However, they were established to attract talented students but have not been successful to do so.), we provided the information needed to base our design effort on. In this paper we aim to present the design process and outputs as well as the new methodology employed.

Designing the Organization

We can categorize two basically different points of view in approaching problems such as the one we are dealing with. One viewpoint, suggests specific tasks and operations to achieve desired goals. This operational viewpoint assumes the suggested set of actions to result in reaching the objectives. Therefore success in fulfilling that set of tasks means success in solving the problem. The second standpoint seeks activating mechanisms, which would guide the behavior of the system towards the desired goals. From this structural point of view, the single actions are not responsible for achieving the desired objectives, but it is the movement of the system in a desirable framework, which counts.
In designing the organization, we tend to use the second approach, as the system should not be dependent on single actions guided by personalities.
To design the organization with this structural approach, we initially distinguish mechanisms that when activated can lead to the growth and learning capability of the system. Then we aim to shape the structure of the organization in such a way that these specific mechanisms are activated inside it. At the same time we try to anticipate the obstacles and structural restraints which may block the organization's growth or deteriorate its quality, and design their solutions inside the structure of the system. We can assume that by taking the above steps, the actual organization would have the growth and learning structures internally prepared to be activated. Such a system tends to have a sustainable growth, independent of external support.

Growth and Decline Mechanisms

In this section we tend to present important causal structures we have distinguished to play important role in the growth and decline of the system. Each loop is separately introduced with its explanation. Then we present structural aspects and activities needed to activate each link in the loop.

One of the mechanisms, which can potentially lead to growth of the system, deals with motivating the students inside the organization by providing them with the opportunity to use their potentials. Students who feel that their talents would be utilized through working inside the organization, will have more motivation to stay inside the system. This is confirmed by our surveys, which shows a strong relationship between "Engaging in scientific and practical activities" and " Satisfaction with the university". They also become interested in staying with organization because of different facilities and privileges they are provided with inside the system. These facilities would work like a potential difference, distinguishing the organization from other places in which students can be active. This mechanism is presented in Figure 1.

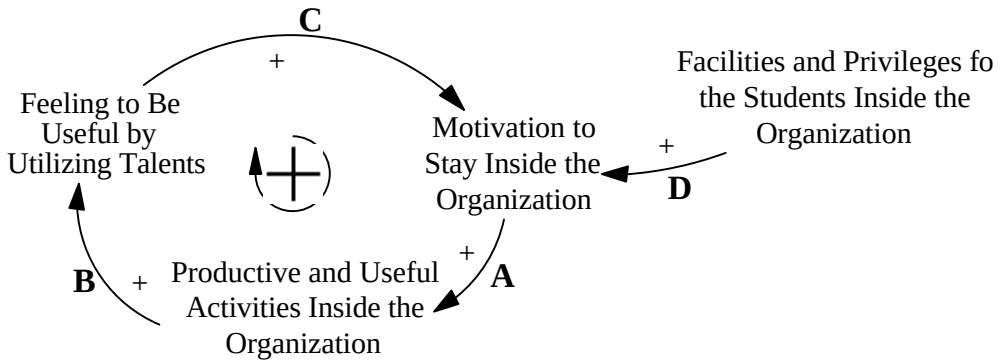

Figure 1. Motivation from engaging in productive activities.

To have this positive loop activated inside the organization, we should strengthen the individual links A, B and C inside the organization, while link D should be maintained to keep the system attractive when compared with other opportunities for students. Table 1 lists important activities and characteristics to activate these individual links.

Link (Figure 1)	Indication
A	- Natural /Automatic (This links indicates the greater number of motivated students which automatically do more activities)
B	- Presenting output of activities. Presenting papers and taking part in conferences. - Doing "real" projects. - Designing activities in accordance with interests of students. - Giving positive feedback (financial, fame, etc.) from good activities to students in charge.
C	- Cultural, group programs to enhance "ownership feeling" among students. - Freedom of activity for students to work in different levels and fields (this freedom would be a unique competency for the organization to keep students inside.). - Strong relationship with scientific and research centers (to provide variety of opportunities to pursue activities in desired fields).
D	- Providing facilities and opportunities, attractive for "Students". Keep the quantity of facilities high enough to provide the potential difference against "out of the organization".

Table 1. Indications of "Motivation ensued from engaging in productive activities" loop.

Figure 2 presents a key structure, which can differentiate between this organization and those developed in past. Active students inside the system are awarded for their achievements by their eligibility to stay inside the system and keep on using the facilities. This enforces the link

between “Productive and Useful Activities of the Student” and “ Facilities and Privileges for the Student”. This link would block “getting used to” symptom which would accompany any time-unlimited advantage and has been an active weakening point in the two reference organizations.

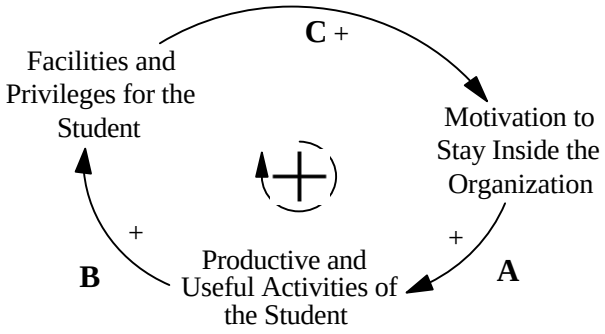

Figure 2. The Feedback on Activity Loop.

To activate the links in the above loop, we would present the following guidelines in Table 2. Note that while we assumed the link “ Motivation to Stay Inside the Organization” to “Productive and Useful Activities Inside the Organization” to be natural (Figure 1, link A), we can not ensure its being automatic for an individual.

Link (Figure 2)	Indication
A	- Preparing evaluation systems to trace members’ performance (so that he feels no safe corner to stay in without being active).
B	- Activities of a member student affect his eligibility to stay in the system. - Students are awarded with more facilities for high degrees of performance.
C	- Discussed in previous sections.

Table 2. Indications of “Feedback on Activity Loop”

The third growth structure counts for independence of the organization from outer resources in maintaining its facilities. Productive activities and real projects done inside the organization can help it gain the financial resources required to manage the system and increase its facilities. More opportunities inside the organization would motivate student members to be more active while attracting new strong students who have not taken part in the organization’s activities. Figure 3 shows these positive loops.

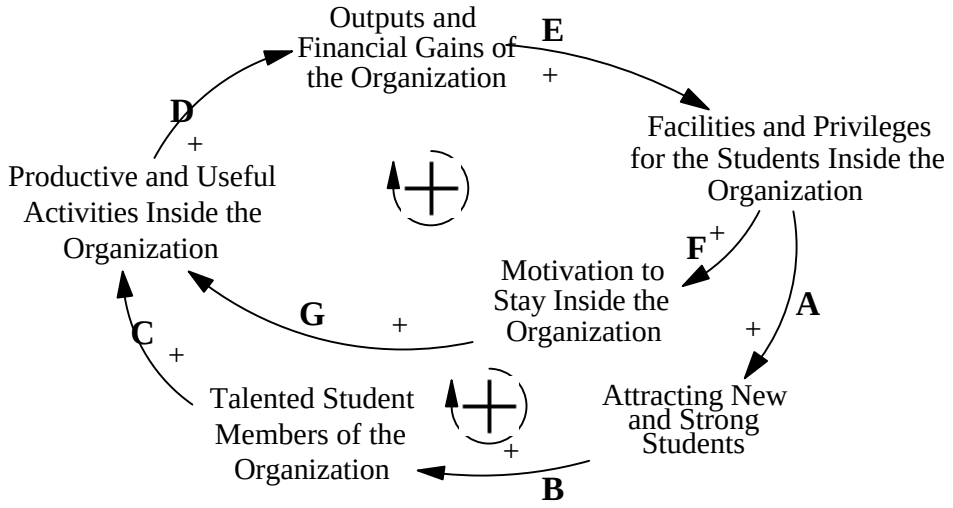

Figure 3. Financial independence loop.

Link (Figure 3)	Indication
A	- A system for informing students outside the organization about its activities. - Declaring the outcomes of activities inside the system.
B	- Natural/ Automatic
C	- Defining sufficient activities. - Considering students interests in defining activities and projects.
D	- Doing activities with financial benefit. - Marketing for finding and defining projects.
E	- Spending the earnings on supplying the system and helping it grow.
F	- Discussed in previous sections.
G	- Natural/ Automatic

Table 3. Indications of financial independence loop.

The forth growth structure (Figure 4) is a classical one, representing the effect of getting famous on attracting new students to the system. As new strong students are attracted inside the system, they would provide information about the organization for those outside. This will make the organization more and more public and therefore brings in more new students. This structure is practically activated by mechanisms such as word of mouth, which are outside the boundary of the system.

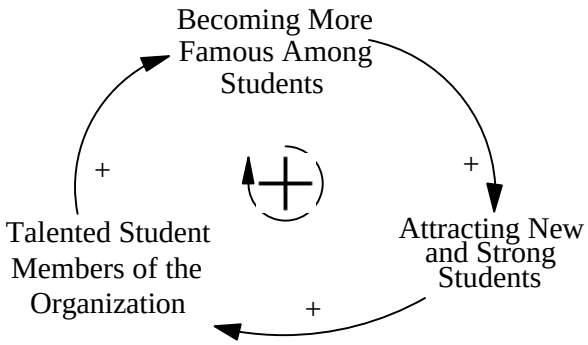

Figure 4. Becoming well known.

To discuss limits to growth structures, we would look at the most important factors, which had appeared to count for failure of the two other investigated organizations, and then would recommend structural adjustments to prevent the difficulties.

One of the most important limits to growth arises from lack of facilities and opportunities in the system for individuals, which would discourage students from participation. This problem increases as the number of students inside the organization grows, while its base of facility and opportunity doesn't. The result would be less the attractiveness of the organization, which eventually blocks its growth (Figure 5). This dynamic is very probable to be active in most governmental organizations, which usually have inflexible budgets.

To maintain attractiveness of the organization along with its reputation, we should not let the facility per person to lowers a limit, but this would impose a limited number of members, which is not desired. To avoid this limit on number of members, the system should have a link between its size and its budget (Link A in Figure 5). This link can be achieved within some internal mechanisms, which use the output of the activities inside the organization to increase the budget. This discussion confirms the results of the financial independence loops (Figure 3).

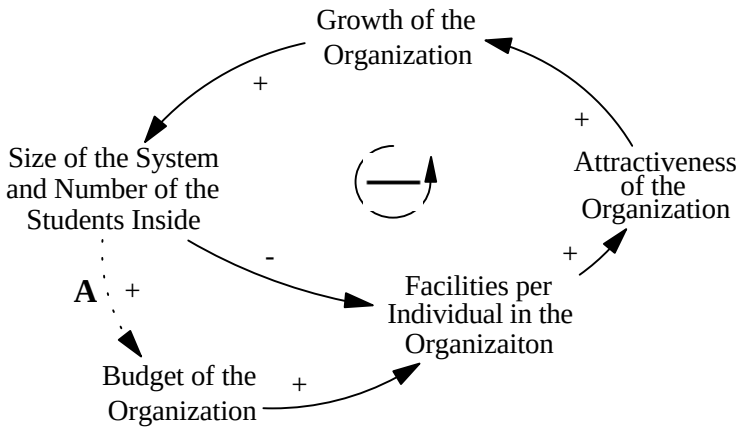

Figure 5. Fixed budget limit to growth loop

Another important limit arises from managerial problems. As the organization grows larger, it needs more managerial structures to support its operation properly. However the intangible managerial deficiencies are rarely taken so serious. The result is lower quality of management, which lowers the attraction and blocks the growth of the system. To tackle this problem, we would devise a link between size of the organization and its managerial capabilities (link A in Figure 6). This connection means growth of the system to be balanced with its managerial structure. However, growing managerial structures, may impose some bureaucratic atmosphere on the organization. Such atmosphere is a hazard for creativity and innovation, the vital element of a successful activity of the students (loop L2 in Figure 6).
Engaging the members in managerial activities of the organization would help us face this problem, while it adds to students managerial abilities, teamwork experience and a feeling of ownership towards the system. Other points to avoid the bureaucratic atmosphere are: utilizing students' ideas in setting rules, using computerized systems (to increase speed, reduce paper work and provide more information for everybody) and letting members take part in decisions affecting them.

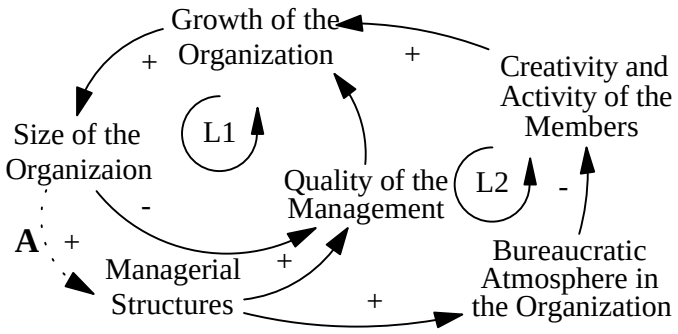

Figure 6. Management quality limit.

Decline in the quality of activities done inside the organization, counts for the next failure structure. Most of the activities and projects should be guided and supported by some experienced members, which appear to be the professors of the university. As the size of system (and hence the number of projects) increases, there would be less time and support allocated to each activity by the (constant base of) experienced members. This may ultimately result in the

erosion of the quality in doing project and therefore limit the growth of the organization (Figure7). Balancing the growth of the system with its supporting resources is an important task to avoid quality deterioration. We may set some control to balance desired size of the organization with the support resources available (Link A in Figure 7). This helps us keep the balance needed for sustainable growth. Meanwhile we should activate the structures to strengthen the scientific/ experience support resources for the organization (Link B in Figure 7). This might be done by increasing contacts and relation with the scientific and research centers all over the world and engaging the academic alumni of Sharif (wherever they are) in the organization's activities.

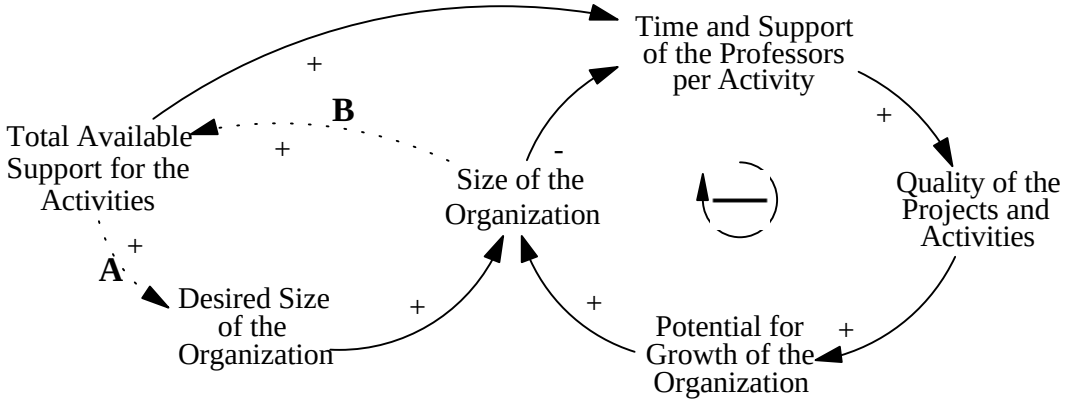

Figure 7. Scientific/ Experience support limit.

In pervious structures, the most important limits to growth were activated as the number of the students inside the system increased due to growth. This implies a definition of growth, which puts stress on physical growth of the organization. By expanding this definition, we may regard improvement in quality of the members and their activities as growth. This new definition, helps us keep a balance between different aspects of growth and resources needed, hence avoiding the collapse of the organization as a result of the distortion of the good image (and attractiveness), managerial weak-points or the activity quality deterioration.

Learning in the Organization

To maintain a sustainable growth, any system should have some internal structures to respond to the changes in the environment and correct its goals and actions with respect to its own performance. Organizations deprived of this flexibility and learning, can not adjust their structure and policies to enhance their performance and hence are more susceptible to failure (Morgan 1986). As our organization is going to enter a new environment, it can not use the experience of others in the area. This tends to force the organization into many new and unexpected situations, urging the system to take in learning and flexibility to survive.

The following figure shows a generic learning mechanism. Activating the loops involved, would enhance internal learning capability of the organization. The first loop (L1), tends to guide our performance towards some goal from a defined set of policy. However, real benefit arises from the other loops (L2, L3) which would enhance the mental models of the decision-makers. This improves the quality and effectiveness of their goals as well as their decision policies, which adds flexibility to the organization.

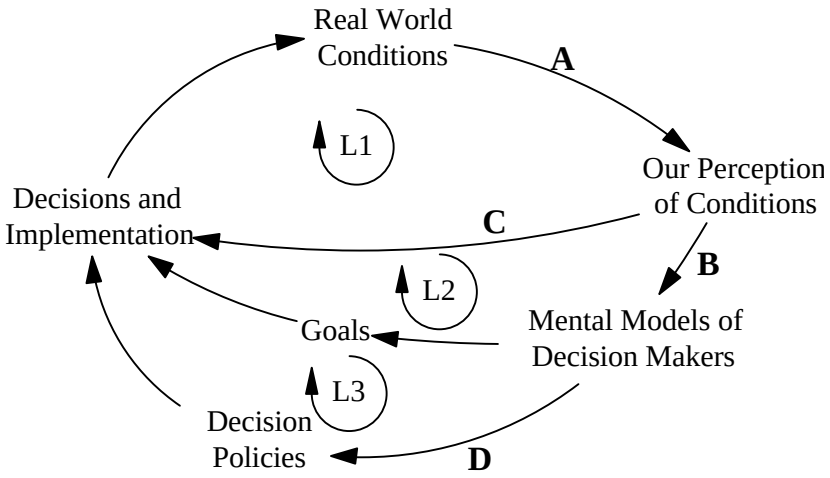

Figure 8. Learning in a system.

To activate the discussed learning mechanisms inside the system, we would design activities and processes to strengthen each link, so that the whole loops become active. These points are gathered into Table 4.

Link (Figure 3)	Indication
A	- Computerized information systems. - Defining variables to assess the situation of the organization. - Measuring and updating these variables.
B	- Analyzing the structure and conditions of the organization steadily. - Making the results of these analyses well-known to all members of the organization. - Involving managers and decision makers of system in generation of these analyses.
C	- Spreading the information in manageable, useful forms inside the organization.
D	- Providing flexibility in rules and policy structures of the organization.

Table 4. Learning requirements

The learning process improves the mental models of all people involved and is a great source for improving their capabilities. From this point of view, involving the majority of the organization in this process, is a beneficial action. A requirement for this involvement is the free circulation of information inside the system (Morgan 1986). This organization-wide learning also requires the majority of members to be involved in the decision making processes, a point confirming those developed in previous sections.

Organization's Sections

Clarifying the design of the organization involves identifying important activities, which should be handled inside the system and devising the appropriate ways of doing them.
We identified some of these activities from guidelines developed based on activating growth loops, deactivating decline structures and enhancing learning inside the organization. Some of the links discussed, needed specific activities to be handled, and naturally we should devise some sections to take care of them. However, these activities are developed to put sustainable growth and learning into work rather than identifying every single activity, which should be handled inside the system. As a result, we should add all other routine activities of the system, not covered in previous sections, to develop a more comprehensive picture of the organization. This is done by classical methods of organizing (Kontz & Weihrich 1993).

Summing up the activities generated from the two discussed sources, we came up with two general groups in the organization: Internal/ Support activities and Productive activities.
In the following tables (Tables 5 and 6) we have briefly explained each group by its categories.
1- Productive activities: These are broken into three main categories, based on defined goals of organization (Table 5).

Category	**Description**
Practical-Industrial	These are primarily projects defined in relation with industry, to solve problems, design and improve processes. While training the student members practically, these projects are the main financial source to handle the organization, independent of external resources.
Scientific-Research	Research and scientific activities of students inside the system, fall into this category. The category would have outputs such as scientific papers, inventions, setting up or taking part in conferences and engaging in scientific competitions.
Entrepreneurial	This set of the activities tends to put entrepreneurial ideas and potentials of members into reality. The organization can link investors to entrepreneur members and facilitate their cooperation. This can also provide the system with some financial resources.

Table 5. Productive activities breakdown

2- Internal/ Support activities: Some of them are to support productive activities, while the rest are needed to handle routine jobs of the system and keep the growth and learning structures active. These activities are categorized in nine sections. The management is separately discussed in forthcoming sections.

Category	**Description**
Financial	Handling financial affairs, costs, revenues and loans to members.
Recreational & Cultural	Supporting recreational and cultural programs of members.
Information	Collecting data from different sections and activities, managing information circulation within the organization, Creating computerized information systems, design and distribution of desired reports for different sections.
Administrative	Handling administrative activities of the organization, making contracts.
Facility Management	Maintenance and improvement of facilities in the organization such as library, computer site and hardware.
Members and Activities Evaluation	Evaluating results of projects and activities done inside the system and their contribution to eligibility of members to stay inside of the organization.
Public Relations	Relation with national and foreign organizations, doing activities to make the organization well-known
Marketing	Finding industrial projects to be done inside the system and collecting investors for entrepreneurial projects.
Alumni and Continuing Education	Finding opportunities for members to continue education or do research, Collecting and keeping databases of former members inside/out of the country and keeping up relations with them.

Table 6. Internal and support activities

Organizations Structure

Having defined the important activity-based sections of the organization, we should devise a consistent structure for the system that can accommodate these sections while setting sound relationships between them. This structure should be able to facilitate performance of growth and learning structures discussed.

To gain this goal, we investigated a range of different organizational structures with the criteria of how much they can facilitate growth and learning loops performance, while weakening limits to growth. Examining the range of organizations from bureaucratic to flexible with these criteria, we came to focus on the most flexible end of the spectrum. Based on this framework, we devised a structure with the following characteristics:

- Handling most of the activities in the organization as projects done by members (both internal and productive activities).
- Freedom of choice in selecting projects and teammates by members.
- Eliminating superior-subordinate relationship to a great extent.
- Rewarding members and determining their eligibility to stay in the organization based on their performance in their projects.
- Giving authority and responsibility to members on most decisions affecting them.

The proposed structure is compatible with the framework introduced in " A New Corporate Design" (Forrester 1965) to a great extent. Our main reasons for defining this structure, is its coordination with growth and learning mechanisms discussed on one side and the nature of activities and people involved which let us apply the framework, on the other side. The discussion of these reasons in detail, follows:

1- The nature of all three categories of productive activities (Practical, Scientific, Entrepreneurial) is compatible with being done as projects (Kontz & Weihrich 1993).

2- Members of the organization are all educated people with dependable cultural background. This facilitates giving responsibility and freedom to them, without serious concerns for consequences.

3- Students are not going to stay in this organization for a long time (as their educational period is limited). This point prevents us from applying hierarchical structure to the organization efficiently where frequent changes in superior-subordinate relationships decreases productivity.

4- As the level of bureaucracy decreases in an organization, it becomes more successful in creating a learning atmosphere (Mogan 1986).

5- Defining the activities as projects together with freedom of choice, creates a competitive atmosphere in the organization which enhances the quality of the projects.

6- Handling internal activities of the organization with the help of students, would decrease costs, so that the financial independence of the system is more easily achieved.

7- Providing more freedom for members, this structure let them pursue their own interests, in different fields and on any level. This reinforces the growth loop discussed as "motivation from engaging in productive activities" (Figure 1) by strengthening links B and C.

8- Freedom of action and decision making ability of members, would make the environment of the organization lively and attractive. This facilitates attracting new students, thus reinforcing the loops " Financial independence" by link A (Figure 3) and the loop "Becoming well-known" (Figure 4)

9- Handling the activities as independent projects, would provide us with opportunity to utilize support of the experienced people outside of the system in our projects. This would weaken the limit to growth structure discussed as "scientific/ experience support limit" (Figure 7). It would also facilitate more productive relationship with the alumni of Sharif and the former members of the organization.

10- Using students in projects defined for internal activities of the organization, helps us grow the managerial and administrative sections of the system, in balance with the number of members. This prevents the growth limit discussed in "management quality limit" section (Figure 6, loop L1) while it does not enforce bureaucratic atmosphere (Figure 6, loop L2) as the students are involved in the management process.
11- By working in separate, independent projects, everybody would be rewarded based on his own performance. This improves responsibility of the members and makes them more creative and employ all their potentials. As a result they are better motivated (enforcing link B in Figure 1) while they improve their qualifications faster.
12- Putting the responsibility of projects on participating members, they would pay more attention to their environment while having to make better decisions, they examine their mental models and decision policies more frequently, both enhancing organization-wide learning (Figure 8 and Table 4).
13- Decreasing management levels of the organization enhances flexibility and free circulation of information inside the system, which are important components to achieve the desired learning organization.

Project/ Section Relationship

In previous section, we suggested the majority of activities to be handled as projects. As a result we first examined different categories of the activity to find out how much they can be broken into projects. We define three levels according to the criteria of compatibility with the project oriented structure. The first level is when activities in the section can be taken care of as independent projects. In the second level, there is a person in charge of the section who does the coordination and is responsible for the output, however most of the activities inside the section are done as separate projects, performed by different teams. The third level consists of those sections whose activities are not easily broken into separate projects. This level would employ the students' capabilities, but rather in the form of part time assistantship than specific projects. In the following table, different categories of the activities, which represent the distinct sections, are distinguished with respect to the three discussed levels (Table 7).

General Group	Section	Compatibility Level	General Group	Section	Compatibility Level
Productive	Practical	All Project	Internal	Information	All Project
Productive	Scientific	All Project	Internal	Facility Man.	All Project
Productive	Entrepreneurial	All Project	Internal	Public Relations	Semi Project
Internal	Financial	No Project	Internal	Marketing	Semi Project
Internal	Administrative	No Project	Internal	Evaluation	Management
Internal	Recreational	All Project	Internal	Continues Education	All Project

Table 7. The sections' compatibility with the project structure

In table 7, evaluation is associated with "Management". This is because the activity of evaluation is to be handled by management group of the system. Management is significantly different from other sections in some aspects, so that we would discuss it separately.

Decision Points and Policies of the Organization

Important decisions which should be made inside the organization, determines its behavior and significantly affects those inside the system. These decisions clarify the framework in which different sections are acting and the important relationships between these sections. As a result

any decision rule set may have significant effects on activating or deactivating designed growth and learning structures. In this section we discuss important policies governing the decisions of the organization about the flow of three general elements in the system: people, activities and information. Important categories of people in our organization are the students and the experienced members (usually professors). Activities are broken into the project and regular. We also investigate management, as the coordinating component of the system.
In designing the policies governing each component, we have set activating desired growth and learning structures as the guideline. However, each policy may have some long-term consequences that might affect other parts of the system as well (Sterman 1994). This emphasized investigating every policy for unexpected mechanisms it might activate. Respecting these points, we came up with the following choices for the important policies.

Students- The most important policy, regarding the students, is how they get into/out of organization. We indicated in growth loop " Feedback on activity" (Figure 2 and Table 2) that eligibility of the people to stay inside of the system should be determined based on their performance in the organization. We set an evaluation system that assessing every project, would give positive (negative) points to the involved members, based on their performance in the project. The points would depreciate by time, so that the main weigh is given to the most recent activities. This requires the student members to be active as long as they desire to stay in. We would also put some points for the GPA of students, their rank in the National University Entrance Exam (NUEE), their scientific honors and etc. The selection of members from students is done at the end of some fixed period, when their aggregate point determines who is in and who is out. New members are also introduced from two sources: incoming talented students of the university who automatically become eligible for entering the system (they are selected from top students of the NUEE and the participants of International Scientific Olympiads). Other students can collect points on their GPA or taking part in organization's projects as co-member. The opportunity for non-members to take part in projects as co-members would provide a lot of motivation for those out of the system to get in. It is also designed to prevent possibility of "success to successful" pattern (Senge 1990), which might be the case as members collect positive points by doing projects inside the system.
Knowing how to select the members from pool of applicants, we should determine the number of members we are going to have in each period. To prevent attractiveness of organization from deterioration, we set a maximum on the number of the student members, based on the system's budget. This policy may slow down the growth of the organization, but balancing the expansion with the resources, would prevent the delayed loss of attractiveness which generates overshoot and decline. On the other hand, if the organization faces a difficult situation, which affects its budget, the policy makes members feel under pressure to perform better (as they see future cut off in the number of members) and helps the organization succeed faster. This mechanism is presented in Figure 9.

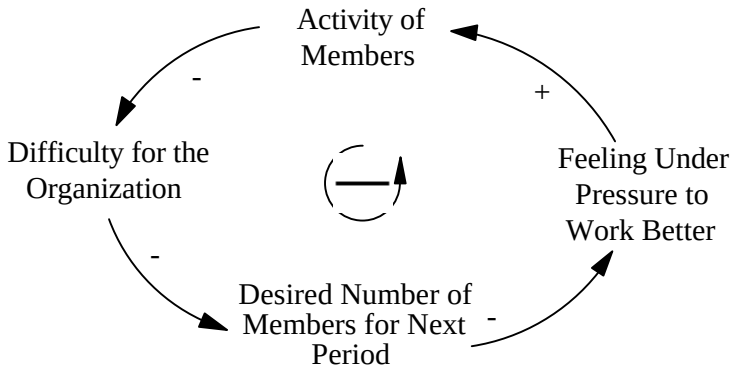

Figure 9. Balancing structure which copes with difficulties.

We do not break down the members into different levels, as it might have unfavorable effects on the culture of organization, however, we suggest special awards and competitions to reward more active members.

Professors- To prevent the limit imposed by the number of professors (Scientific/ Experience support limit, Figure 7), we didn't put a boundary on where to find a university tutor to cooperate in the project. Students are free to be guided by any professor inside or outside of the university to pursue their project, provided that the professor takes the responsibility. On the other hand, to balance the size of the organization with the scientific support available (Link A Figure 7), any project is due to have an experienced person (usually a professor) in charge. This criterion would prevent number of projects to exceed the support capability. Any professor, who is in charge of an active project, is considered "member". The performance of each project is recorded and available to all members, guiding them on choosing the professors and preventing experienced members to get involved in a number of projects more than their time and experience capabilities.

Projects- The important decision policies discussed about flow of this component relate to how projects are defined and how they are evaluated.
In this organization, projects are defined from three ways. First: offer of a proposal from a team of students or one of the experienced members. These projects are approved without any further examination, provided they need resources less than a defined maximum and they don't interfere with other sections' responsibilities. If this is not the case, the proposed project should be confirmed by evaluation group before implementation. Freedom in suggesting desired projects, would strengthen the motivation of members to take part in activities inside the organization (Link C, Figure 1).
Second: finding the projects from the industry or other external organizations, done by the marketing section or individuals and proposing these projects to be done inside the system. These projects are presented in the organization, and those members who are interested will give their proposition to be evaluated by the evaluation group. The evaluation group will choose one of the proposals, based on some criteria including the experiences and records of team members and resources asked for in each proposal.
Third: internal and support projects. These activities are defined by management team or those in charge of different sections and would be offered inside the system. Interested members will give their propositions and the management will choose one.
Evaluation of projects: Before the start of any project, a committee which consists of the representatives from the evaluation group, team members and (for the internal projects) involved section, would discuss and determine some quantitative criteria for evaluating the project as well the maximum point which the project might acquire. When finished, the projects are evaluated and graded on the basis of agreed criteria. This is done by the evaluation group in cooperation with a team member and a representative from the section or industry involved (in the case of Internal or Industrial projects). The grade given on evaluation adds to the team members' records.

Regular Activities- This category mainly involves routine activities of the financial and administration sections. These activities are managed by the section in a common pattern. The only point about this category of activities is participation of the student members.

Information- A key element in this organization is free circulation of information. Any piece of information should be at hand for any member of the system. This facilitates fair competition without any monopoly of the information inside the organization. The other outcome of this

policy is faster and more accurate feedback for all the people involved, which enhances learning and performance.
All of the data and information from sections and project are stored into databases of an organization-wide computerized network. Access to this network is free for all the members and provides them with the same information base for competition. Provided with more information about the performance of the system and its environment, all members learn better and faster (Figure 8, link A). Except from the shared information provided for all of the members, project teams can ask for well organized reports based on available data, which should be prepared by the information section.

Management- A managing council is elected by all members (students and professors). This council is in charge of choosing the top manager of the system who selects the section managers. While managers in charge of the marketing and public relation sections should define specific projects, those selected for "All Project" sections in table 7 are mostly responsible for coordination of projects proposed and those in progress. These managers can be selected from the student members.
The evaluation team is elected by the managing council, however their fair performance is evaluated and voted by all members. This can partially prevent unjust behavior of this important group. Free circulation of information provides members with the records of the managing council and the evaluation team, hence it improves the quality of elections.
The managing council is also required to define some projects for continuous audit and analysis of the organization's situation, management and environment. Output of these projects will help the management group develop a better understanding of the system to enhance their policy setting. Learning about internal and external situation of the organization along with analysis of this information improves learning process (Figure 8, links A & B). Members are also better engaged in learning by doing the projects related to the audit and analysis of the system.
Updating goals and decision rules is an important part of learning structure (Figure 8, loops 2 and 3). As a result we should device some mechanisms to revise and refine the structure of the organization as well as its policies. Any major change in structure and policies of the system, can be suggested by a certain number of the members or by the management. These suggestions should be further investigated and polished by defining a project on them. The decision about the final proposal is made through the vote of all the members.

Putting the Organization into Work
To start up the designed organization, we should provide the base facilities and privileges to attract the students. These facilities and privileges should be well attractive for students because they are set to activate the engine of growth (growth structures in Figures 1-3). Defining the management team, providing the base of information systems, registering the formal structure and absorbing some first members are other jobs required to base the core of the system.
To define the facilities and privileges to be provided, we conducted a survey among a selected number of students in Sharif and came up with the following suggestions:
More freedom in choosing university courses, Convenient access to the Internet, Financial support, Connection with the scientific centers out of the country, Being provided with hardware and software needed for activities, Recreational programs, Scholarships and student transfer programs with universities outside of Iran.

Conclusion
In this paper we designed an organization inside Sharif University based on activation/ deactivation of important dynamic mechanisms affecting the system. Investigating growth, decline and learning structures, we defined different activities inside the system, which resulted

in organizational sections. The policies governing the flow of important elements where designed with respect to their effect on dynamic mechanisms involved.
This design process can be further enhanced by building a dynamic model of the organization. This model would provide the opportunity for quantitative analysis and improvement of the output system.
Having the designed organization work, talented students in Sharif would find it a place to enrich their educational experience. They would learn how to apply what they have studied in practical projects and are provided with more opportunity to concentrate on their interests within scientific projects. These points are in direct connection with the first goal (better education of students) we defined for the system.
Handling Practical and Industrial projects, the link between the scientific community and the industry strengthens. This relationship will have positive effects on the situation of the country and together with the policy of engaging alumni in projects, contributes a lot to fulfilling our second and the forth goal: "Employing the students and the alumni capabilities in real world problems".
Having more communication with the scientific and research centers out of country, the organization tends to provide more opportunities for the talented students to continue their education in their desired fields. This is in accordance with the third goal defined for the organization.
Besides the defined goals, good performance of this organization can contribute a lot to tackling one of the major problems that our society is facing. Brain drain is so common in Iran that 25% of Iranians with university education are staying outside of the country (Emrouz 2000). Collecting the idea of students on the root causes of this issue, we found the main factor to be "Not feeling useful". This organization, by employing the talented students' capabilities, reduces this feeling and hence copes with the problem of brain drain.

References

_ Bryson J.M., F Ackermann, C. Eden, and C. B. Finn. 1996. USING THE "OVAL MAPPING PROCESS" TO IDENTIFY STRATEGIC ISSUES AND FORMAULATE EFFECTIVE STRATEGIES. Strategic Planning for Public and Nonprofit Organizations.

_ Emrouz (Newspaper). 2000. No 350. Tehran.

_ Forrester, Jay W., 1965. "A New Corporate Design." Originally published in Industrial Management Review (MIT), Vol. 7, No. 1, pp. 5-17. Now available as Chapter 6, pages 93-109, in "Collected Papers of Jay W. Forrester" 1975., Waltham, MA: Pegasus Communications.

_ Kontz, K., H. Weihrich. 1993. MANAGEMENT: A GLOBAL PERSPECTIVE. 10th edn. Mcgraw-Hill

_ Morgan G. 1986. Images of Organization. California: SAGE publications.

_ Senge P.M. 1990. THE FIFTH DISCIPLINE. New York: Poebleday.

_ Sterman J.D. 1994. Learning in and about complex systems: System Dynamics Review 10 (2/3) : 291-330

_ Student Affairs Secretary. 2000. Sharif Students Records: Majaleh Elmi Farhangi Sharif 1(1)