

A Brief Discussion on the Relationship among the Units Setting Postdoctoral Research Stations, Postdoctoral Fellows, and Cooperative Supervisors

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Abstract: *Since the official establishment of China's postdoctoral system in 1985, the system has played an important role in promoting education along with research and scientific innovation. The postdoctoral system has also become an important part of China's mechanism to select, educate and employ expertise. However, with its vigorous development, problems do exist in the management of this system, such as unclear rights and responsibilities, ambiguous positioning, difficulty in training while employing talents, etc. Clarification is needed for relationship among postdoctoral, institutes where stations are set up and cooperative supervisors.*

Keywords: *Postdoctoral, Postdoctoral management, Cooperative supervisors, Postdoctoral cultivation*

1. Introduction

As an important system for cultivating innovative young talents in China, the post-doctoral system has blossomed in universities, parks, scientific research institutes, enterprises and institutions in less than 40 years, becoming a green channel for station-setting units to introduce high-level researchers and establish talent echelons. The quality of postdoctoral training is related to the academic output ability of postdoctoral fellows, and the management of the units with stations is also important to create an environment conducive to postdoctoral knowledge creation. Discussions on postdoctoral management cannot be limited to a single dimension in which the station-setting unit performs management functions. The station-setting unit, postdoctoral fellows, and cooperativesupervisors are not simply the relationship between management and the managed. They are all key factors in the construction of postdoctoral mobile stations (workstations).

2. The relationship between the establishment unit and postdoctoral fellows

Although the state has issued a series of relevant regulations on postdoctoral management, the units that set up the station still encounter many problems in the specific management. First, the identity of postdoctoral is unclear, and postdoctoral is regarded as a "temporary unit" in terms of relevant treatment and management. Second, the support for postdoctoral fellows is insufficient, and postdoctoral fellows are subject to various restrictions in terms of funding, research and experimental conditions. Third, the relevant systems and measures for postdoctoral management are not perfect, and there is a lack of mature institutional guarantees at the implementation level within the unit. Fourth, in the implementation process, there are still problems of "emphasis on use and neglect of cultivation" or "emphasis on cultivation and neglect of use".

Postdoctoral management work is highly comprehensive, and some units that set up stations lack a macro-level understanding of the postdoctoral system, making it even more difficult to build a management system suitable for the unit at the micro level. Postdoctoral management can be roughly disassembled and refined from four links. (1) Planning link: that is, the overall and programmatic planning and design of the postdoctoral personnel training by the establishment unit, such as the postdoctoral position in the overall work of the station establishment unit, the goals that need to be achieved in postdoctoral talent training, various measures to support postdoctoral scientific research (hardware facilities, financial support, etc.), various specialized management systems for postdoctoral, etc. (2) Organizational links: specific to postdoctoral daily management, such as Organization and execution of routine activities such as postdoctoral interviews, topic opening, research, and outbound

visits. (3) Supervision link: Supervise whether postdoctoral fellows comply with relevant regulations of the station-setting unit and complete key indicator assessments (such as mid-term inspections and outbound defenses, etc.). (4) Coordination link: communication and coordination between the postdoctoral management department of the establishment unit and other departments in actual work, and solving the problems encountered by postdoctoral fellows in their daily work. In order to improve the efficiency and quality of postdoctoral management, the management department must not only be familiar with various policies on postdoctoral management of higher authorities such as the National Postdoctoral Management Committee, but also understand various management regulations within the unit, and formulate suitable policies for the unit according to the actual situation. At the same time, in the daily management, it is necessary to make a good work plan, maintain active communication with postdoctoral fellows, and especially do a good job in preventive control. Before the start of each job, the training for postdoctoral fellows (including cooperative supervisors) should be done in advance, so that they can clarify their respective job responsibilities and be familiar with the main work process. In most cases, this control is routine work (such as routine work such as opening questions, mid-term inspections, outbound defenses, etc. that postdoctoral fellows must carry out on time), which is equivalent to the management department splitting management tasks into time-limited, Key milestones that can be tested against deliverables. This is a process of joint participation and execution of postdoctoral fellows and co-supervisors, and it is also a process of postdoctoral professional construction. During their postdoctoral work, they not only focus on improving their academic ability, but also gradually improve their self-management ability under the discipline of the system, so that they can meet the professional standards of research-oriented jobs.

The postdoctoral and the unit setting up the station establish a labor employment relationship by signing a labor contract or a scientific research work agreement. Obligations and responsibilities are defined, which is a legally binding two-way relationship, and postdoctoral fellows are also included in the scope of professional researchers of the station-setting unit in terms of procedures. "Discovering more advanced talents in training and use" is the expected goal of postdoctoral station units. Some people believe that if the focus of postdoctoral training is on training, it is necessary to formulate a series of training programs and assessment indicators. The autonomy of postdoctoral If it is not fully utilized, if the focus is on "use", the postdoctoral research ability and postdoctoral suitability will be mainly examined, and the evaluation will be determined by the cooperative supervisor, with greater autonomy.^[1] There is also a view that due to the vague positioning, some station-setting units, especially postdoctoral fellows, project postdoctoral fellows, and self-financed postdoctoral fellows, generally pay more attention to the use of resources than the training because the cost of resources paid by the station-setting units is higher.^[2,3] The author believes that in order to give full play to the academic initiative of postdoctoral fellows, it is necessary to pay attention to the use of postdoctoral fellows, but there is no contradiction between the use and training of postdoctoral fellows. Use and training are the different emphases of postdoctoral fellows at the input and output ends in the process of knowledge production. Use requires postdoctoral fellows to make scientific research contributions to the establishment unit and output academic achievements; training requires the establishment unit to input academic resources and material resources to postdoctoral fellows to increase the value of postdoctoral academic capabilities. For the discovery of high-level talents, the use is an explicit goal, in order to maximize the benefits of postdoctoral scientific research output within a limited time, and is committed to combining the postdoctoral scientific research plan with the overall work objectives of the establishment unit; while training is an implicit goal. To a certain extent, it has a certain meaning of career planning. It aims to improve the "soft power" of postdoctoral academic ability, innovative thinking, teamwork, work skills, and professional ethics. It focuses on developing the potential of postdoctoral fellows in order to achieve the goal of "Trinity": the early academic accumulation of postdoctoral fellows can be well combined with the guidance direction of cooperative supervisors and the overall academic goals of the establishment unit to promote the maximization of academic output benefits.

In order to assess whether the postdoctorate has completed the scientific research plan, the unit setting up the station usually sets some rigid indicators in the links of postdoctoral topic opening, mid-term inspection, outbound, and publication of papers. These standards are more focused on testing the results of the postdoctoral training process. There are indeed certain difficulties in the inspection of the process, which requires giving full play to the role of the cooperative supervisor, focusing on the effect of postdoctoral participation in scientific research projects, and the contribution of scientific research output to the overall scientific research goals of the establishment unit. For the unit setting up the station, it is not the ultimate work goal to require postdoctoral fellows to "reach the standard", and the assessment goals should not be set too cumbersome, but to build an environment conducive to the

cultivation and use of postdoctoral fellows in both "virtual" and "real" aspects: To cooperate with the cooperative supervisor to supervise and manage postdoctoral fellows, it is necessary to create a strong academic atmosphere, strengthen the construction of scientific research and academic platforms, integrate academic resources, and make overall work planning.

3. The relationship between the establishment unit and the cooperative supervisor

The "Opinions of the General Office of the State Council on Reforming and Improving the Postdoctoral System" (Guobanfa [2015] No. 87) proposes to "strengthen the role of the expert academic committee of the station-setting unit in the selection of postdoctoral candidates, mid-term assessment, and evaluation of postdoctoral fellows. The role of cooperative supervisors in the recruitment, training, assessment, and management of postdoctoral researchers".^[4] Here is a macroscopic regulation on the responsibilities of cooperative supervisors. Different from the complicated regulations for postdoctoral fellows, there are not many requirements for cooperative supervisors in policy documents. This leaves a lot of room for the cooperative supervisors to operate in the specific work, and the relationship between the station setting unit and the cooperative supervisors needs to be further positioned.

Although the unit that set up the station has set up a qualification review when selecting cooperative supervisors, and restricts the cooperative supervisors in the form of labor contracts or agreements, in most cases the cooperative supervisors are not a full-time position, and these experts are responsible in their own units. They do specialized business work and serve as postdoctoral cooperative supervisors while completing their respective scientific research work. Therefore, they have a low bond with the postdoctoral management department, and they do not even have a subordinate relationship between superiors and subordinates. The subtlety of the relationship between the two lies in: The postdoctoral management department of the station unit has a loose management structure and communication mode for the cooperative supervisors, and the management department does not constitute an authoritative and centralized leadership for the cooperative supervisors. To a certain extent, this has created a "vacuum zone" in management: because the policy documents issued by the higher authorities do not have detailed regulations on the responsibilities of cooperative supervisors, this has led to some cooperative supervisors having no clear understanding of their responsibilities, and adopting "cooperative supervisors" for postdoctoral fellows. The attitude of "free stocking" cannot consciously play a main role in the postdoctoral training process, and does not play a role in guiding and supervising postdoctoral fellows. Therefore, the unit setting up the station should improve the various systems and regulations on the selection, appointment and dismissal of cooperative supervisors, and emphasize the identity of cooperative supervisors as managers. The co-management of the postdoctoral fellows by the station-setting unit and the co-supervisor will involve more flexible corrective control. Different from the preventive control mentioned above, the corrective control has hysteresis and exceptions, and usually exposes problems in the process of gradual development, even very specific and personal problems. The details involved are outside the oversight of management. For example, postdocs encounter academic difficulties while carrying out their research, which may prevent them from completing their research plan on time. When carrying out corrective control, we must pay special attention to the division of labor between primary and secondary when resolving conflicts. For example, specific academic issues need to be strictly checked by the cooperative supervisor, while difficulties in postdoctoral life (such as possible mental health problems) need to be solved by the cooperative supervisor and the management department.

In actual work, the unit setting up the station should conscientiously perform the work of supervision and service, and clearly stipulate the responsibilities, obligations and consequences of violations of postdoctoral co-supervisors with guiding documents. In fact, the management function of the station-setting unit also has executive effect on the cooperative supervisors, and it is to restrain and supervise the academic obligations undertaken by the cooperative supervisors within the framework of administrative power. But this is only a kind of procedural supervision, not detailed supervision, because the main body that performs academic functions is the cooperative supervisor, and the main role of the cooperative supervisor should be fully utilized in the process of guiding postdoctoral fellows. Supervise whether the process of exercising academic functions complies with the regulations of the superior department and the unit, but does not intervene in detailed academic activities. Specifically, it is divided into pre-supervision and post-supervision: pre-supervision is the review of the qualifications of cooperative supervisors, and it is essentially an academic evaluation process, which should be evaluated by the academic committee of the station-setting unit. In addition to the requirements for senior professional titles, experts serving as cooperative supervisors should also undertake certain

scientific research projects, so that postdoctoral fellows will have the opportunity to participate in specific project research plans after entering the station. Post-supervision is to supervise the academic evaluation tasks performed during the cooperation period between the cooperative supervisor and the postdoctoral fellow, that is, to examine whether the cooperative supervisor has fulfilled his duties in the evaluation tasks such as postdoctoral interviews, project opening report review, mid-term assessment, and outbound report review. If the postdoctoral fellow fails to complete the academic assessment as required or commits academic misconduct, both himself and his co-supervisor shall be warned, and those who are serious cases shall be punished by withdrawing from the station and stopping the recruitment of postdoctoral fellows. As for the co-supervisor's implementation of the specific plan for training postdoctoral fellows, there should be no excessive intervention, and they should cooperate with them to provide corresponding services.

It should be noted that the station-setting unit cannot perform management functions on behalf of others, which will interfere with the academic functions of the cooperative supervisors and make them feel constrained everywhere. Although academic functions are constrained by policies and regulations, they are relatively independent in the implementation process. The management function is to ensure that the academic function does not violate the basic regulations at the periphery, and does not interfere too much with the activities within the scope of the academic function, because the subject who performs the academic function is the cooperative supervisor, and the details and standards of its internal implementation should be the subject. As long as the academic function of the cooperative supervisor is performed within the scope of the management function, it is reasonable, and the authority of the management function cannot encroach on the academic function and cause mutual interference of the functions.

4. The relationship between postdoctoral fellows and co-supervisors

Although the postdoctoral research stage presents more independent characteristics, the cooperative supervisor still plays an important role in the postdoctoral scientific research work. Compared with the doctoral stage, the relationship between postdoctoral fellows and co-supervisors is more complicated. Especially for some postdoctoral fellows who are recruited through scientific research projects and self-financed by supervisors, almost all of their funds come from cooperative supervisors. From the perspective of legal principles and labor-management relations, there is an employment relationship between postdoctoral fellows and cooperative supervisors. However, if the cooperative supervisor only uses postdoctoral fellows as part-time workers, the effect on postdoctoral training and career development will be one-sided. Postdoctoral is a transitional training position, but because they are only engaged in short-term research work in the establishment unit, their guidance and training cannot be ignored. The relationship between postdoctoral fellows and cooperative supervisors is pluralistic and dialectical, both equal and unequal. Based on the employment system of the station-setting unit, the two are colleagues, and they are equal in terms of working relationship. Based on professional fields such as academic achievements and industry qualifications, cooperative supervisors are all experts, and they are unequal from an academic perspective. It is precisely because of this dialectical relationship that the supervisor is preceded by the word "cooperation".

So how should we understand this partnership? First of all, this cooperation model has elements of employment relationship and teacher-student relationship, which establishes the concept of "training while using" postdoctoral staff. In English, co-supervisors have the terms co-advisor (consultant) and co-supervisor (instructor, supervisor), which also shows from the side that they have the function of providing advice for postdoctoral fellows and supervising their completion of research tasks. Mr. Li Zhengdao once pointed out that postdoctoral fellows should "find their own directions, find methods, and find results." Postdoctoral fellows have the ability to conduct independent research and have great autonomy in choosing research topics. They carry out the next step through cooperation. Research, so the cooperative supervisor mainly provides directional and suggested guidance for their research, and the two are "collaborators" on the academic road, forming an academic community. The reason why it is called a community is that the two have similar academic directions and share specific academic resources. The independence and autonomy of postdoctoral research are based on their academic self-choice, but they cannot always fight alone in the process of carrying out scientific research, and they cannot do without the support of the scientific research team behind them if they want to come up with results. Therefore, cooperative supervisors and station setting units should provide good academic resources for postdoctoral fellows as much as possible. As far as the cooperative supervisor is concerned, the help that can be provided can be roughly divided into three aspects. One is financial support, which is mainly aimed at project postdoctoral fellows and postdoctoral fellows who are

self-financed by supervisors, and most of their salaries and research funds come from cooperative supervisors. Academic resource support, including providing opportunities for postdoctoral fellows to participate in scientific research projects and academic activities, sharing various academic information, introducing academic contacts, etc. The third is intellectual support, which mainly refers to the guidance of academic research for postdoctoral fellows.

The cooperative supervisor is also the "guide" and "supervisor" on the postdoctoral academic path. The communication between the cooperative supervisor and the postdoctoral fellow is a two-way communication process. After completing the interview and screening, the cooperative supervisor has a general understanding of the personal situation of the postdoctoral fellow. For the postdoctoral fellow, entering the station unit means coming to a new working environment, which requires the cooperative supervisor to lead them to have a preliminary understanding of the academic research progress of the station-setting unit, especially the key issues that have yet to be resolved in the scientific research planning. When helping post-doctorate to determine the research direction, the cooperative supervisor should consider the overall academic plan of the station-setting unit, the post-doctorate's personal academic expertise and the academic tasks that may be undertaken in the future, and strive to combine the post-doctorate's personal research with the academic focus of the station-setting unit. To "merge the small with the big, see the big with the small". If the post-doctorate only does fragmented research, it will not only be out of touch with the needs of the unit, but also limit the improvement of personal ability. In postdoctoral training in the United States, postdoctoral fellows need to formulate a "Personal Improvement Plan", which is a comprehensive plan for postdoctoral careers. During the formulation process, both postdoctoral fellows and co-supervisors must participate, and co-supervisors need to evaluate the work of each stage of postdoctoral fellows.^[5] For a long academic career, postdoctoral fellows are just at a critical stage of linking the past and the future, and the participation of cooperative supervisors in postdoctoral careers needs to be improved. Cooperating supervisors should act as guides on the road of postdoctoral research and help them find their own academic orientation. Cooperating supervisors also need to supervise postdoctoral scientific research assessment tasks (such as mid-term assessment and outbound reports and other key nodes). The evaluation of postdoctoral students by station-setting units is result-oriented, while the evaluation of postdoctoral students by cooperative supervisors is not only result-oriented, but also process-oriented. That is to say, the postdoctoral research ability, the role played in the scientific research project, the comprehensive quality of the individual and other details displayed in the whole research stage should be evaluated more comprehensively.

5. Conclusion

As for whether excellent postdoctoral talents can be cultivated, postdoctoral management is very important, and effective management can lay a good operating foundation for postdoctoral training. Postdoctoral management covers many departments and personnel, and the content involves planning, organization, supervision, coordination, etc. from macro to micro. In order to establish an effective management model, in the final analysis, it is necessary to clarify the positioning of the station-setting unit, cooperative supervisor, and post-doctorate, to find out the position of the post-doctoral fellow in the overall academic layout of the station-setting unit, to correctly balance the relationship between training and use, and to improve postdoctoral research self-management ability. It is necessary to clarify the identity of the cooperative supervisor as a collaborator, manager, supervisor, and guide, and fully perform the management and academic functions of the cooperative supervisor. The unit setting up the station should establish a management system suitable for the unit in practice, carry out various tasks under the framework of the system, establish an active communication and coordination mechanism with postdoctoral fellows and cooperative supervisors, and create a good academic atmosphere for the training of postdoctoral fellows.

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