

# NETHERLANDS

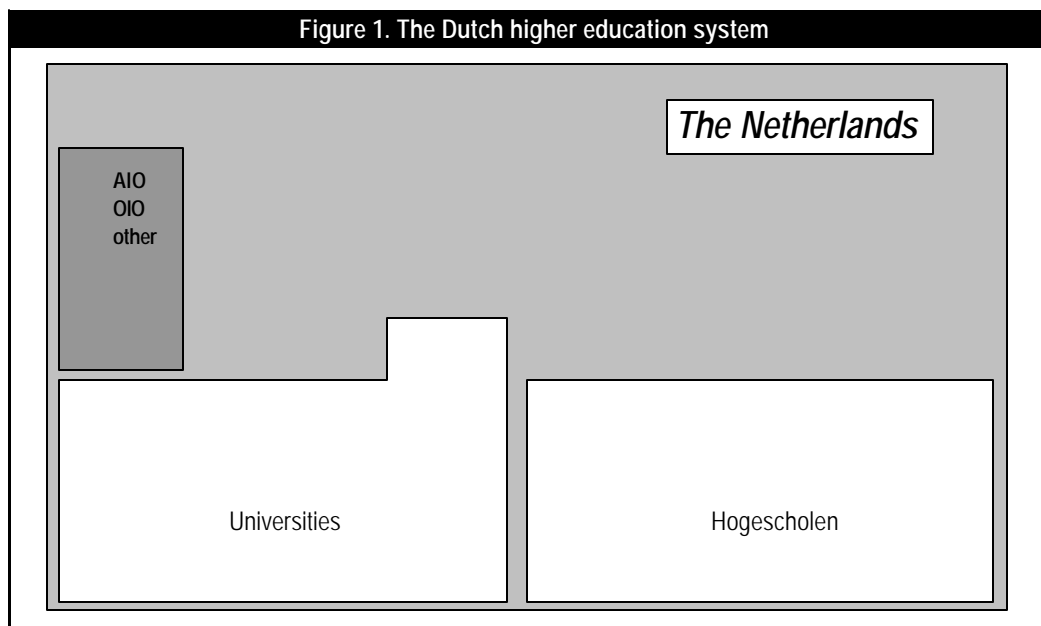
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## INTRODUCTION

The Netherlands has a binary system of higher education: a university sector and a nonuniversity sector primarily consisting of the *hogescholen*. In the *hogescholen*, advanced professional education is offered, comparable to that provided by the former British polytechnics. Around 80 *hogescholen* provide 4-year programs. Thirteen universities have been established that offer 4- to 5-year programs leading to the *doctorandus* degree. This degree roughly equates to the master's degree (Goedegebuure et al. 1994, p. 192). The *doctorandus* (which literally means "one who is entitled to become a doctor") degree is usually the minimal requirement for doctoral degree matriculation, although it is at the discretion of the universities to admit *hogeschool* graduates. Doctoral candidates may have a normal research or teaching position at universities or other research institutes, or they may hold a distinct doctoral position called the AiO or OiO.<sup>1</sup> At the initial postgraduate education level, both universities and *hogescholen* offer a variety of programs that lead to recognized degrees and generally have a market orientation. Figure 1 graphically presents the Dutch higher education system. In this report, we focus on the Dutch system of doctoral education.

## TRENDS IN GRADUATE EDUCATION

In 1644, the University of Utrecht was the first to employ the title *Philosophiae Doctor et Liberalium Artium Magister* (literally, doctor of philosophy and master of a liberal art) (Hesseling 1986, p. 25). In those days, a dissertation could be either of two types of products, each with a distinct academic tradition of defense. The first type was the *disputatio sub praeside*, where the candidate defended a set of printed propositions—later a short essay—under the direction of the professor. The second type was the *dissertatio pro gradu doctoratus*, where the candidate had to defend a thesis against the opposition of a larger academic audience of students, doctors, and magisters. The public defense often featured an extensive ritual, such as the one at the University of Leiden, which involved an elaborate processional, speeches lauding the successful candidate, a recessional, and a graduation dinner. At present, many of these rituals are still featured at Dutch universities. In the 17th and 18th centuries, the doctorate represented a "vocational" degree rather than a research degree; the holder was entitled to teach.



SOURCE: D. De Wied, Postgraduate Research Training Today: Emerging Structures for a Changing Europe, The Hague: Netherlands Ministry of Education and Science, 1991.

<sup>1</sup>These positions are described later in this paper.

In the course of the 19th and early 20th centuries, the process of obtaining the doctorate gradually changed. Although Dutch universities remained institutions of education (Wachelder 1992, p. 28), the research ethos gained importance. The functions of the degree changed under the influence of the research imperative of the German universities and laboratories. The doctorate became proof of one's capabilities to conduct independent research. In the sciences in particular, renowned scholars formed research groups where research was conducted in master-apprentice relationships. Although inspired by German universities, the Dutch doctoral system has developed within its own distinct societal and academic context, and is sometimes not comparable to the German example.<sup>2</sup>

After World War II and up until the 1980s, an individual pursuing a Ph.D. was usually employed as faculty staff—sometimes in the position of a research assistant, but also as regular (senior) staff. Apart from being a profound rite of passage, the writing of a doctoral dissertation was an informal endeavor. The process was not a fixed series of tasks dictated by university or government standards. Usually, it had the characteristics of the apprentice model: a doctoral candidate working under the guidance of a professor. Yet, unlike the German situation, the role of the supervisor or chair-holder was less authoritative. The writing of the dissertation was primarily the responsibility of the person desiring the degree. There were, of course, strong differences by discipline.

In the natural sciences, research was conducted in laboratories through collaborative effort. As early as the 1950s, preparation of a dissertation in the sciences had shifted from individual work to an educational process supervised by senior staff and a supervisor. This, together with a clear demand for qualified researchers from outside the university, led to the concentration of larger groups of doctoral candidates in university laboratories (Beenakker 1990, pp. 321-22). A representative from this field once described this situation as follows (Bartelse 1999, p. 91):

In the natural sciences there has always been a high degree of organization. The research team conducted a control function for the quality and proceedings of those working on a dissertation. The role of the pro-

fessor can be compared as a coach: he gives intense guidance to the doctoral candidates without actually conducting the specialized research himself.

In contrast to the natural sciences, the role of the dissertation featured less prominently in the social sciences and humanities. The disjointed organization of research in the humanities and social sciences stimulated individual undertakings. The dissertation was written in relative isolation, in addition to fulfilling teaching and research responsibilities. Caught between the demands of regular teaching and research loads and high ambitions, the thesis frequently became for these researchers a life-long *magnum opus*. In addition, and unlike the natural sciences, a clear labor market demand for doctors in the social sciences never developed. Hence, these fields did not experience a structuring influence on the doctoral process from the outside. The role of the supervisor was also different than in the sciences. The candidate's supervisor was actually more of a colleague who, once in a while, commented on the work in progress.

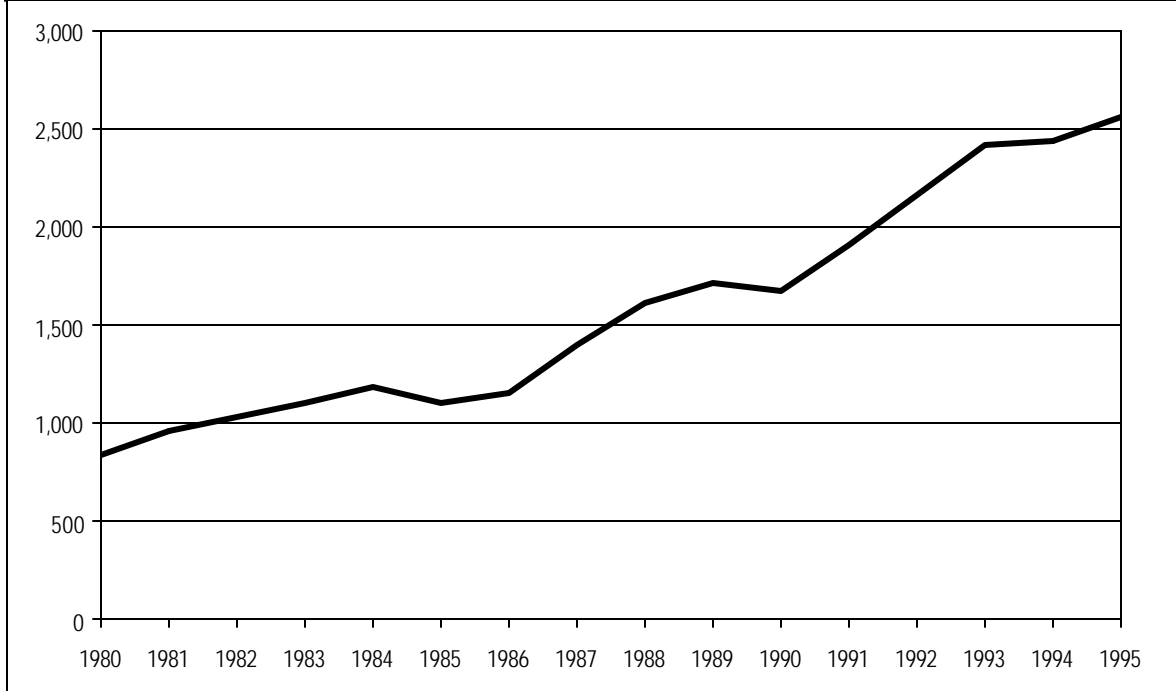
Since the 1960s, the Dutch government has moved into the area of research training. In a series of policy statements and laws, attempts have been made to adjust or reform doctoral training according to varying objectives. These are addressed in the next section. In the remainder of this section, we provide some quantitative trends on doctoral education.

As said, doctoral work can be conducted while serving in one of two junior positions that were created for doctoral candidates in 1986. Thus, a candidate can be an assistant in education (*assistent in opleiding*—AiO) if employed by a university, or a researcher in education (OiO) if employed by the Netherlands Organization for Scientific Research (NWO). Dissertations are also prepared while employed in normal research positions at universities or in a candidate's spare time. About this latter group of doctoral candidates, the available information is less detailed and less accurate. Figure 2 presents the number of Ph.D. degrees awarded between 1980 and 1995. The number of Ph.D. graduates has risen from 700 in 1980 to 2,600 in 1996. Since 1990—4 years after the introduction of the AiO system—the increase in awarded Ph.D.s is striking. Figure 3 shows a proportional breakdown of Ph.D. degrees by discipline.

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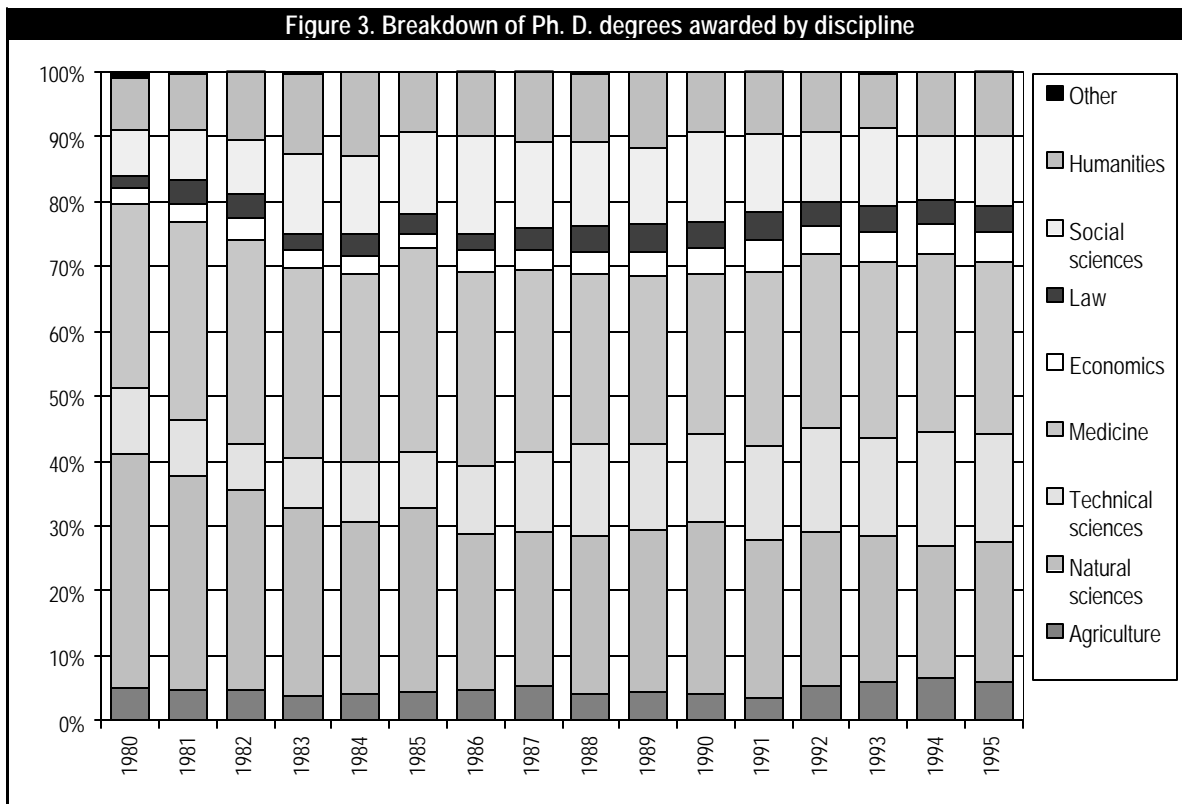
<sup>2</sup>Moreover, the German example did not provide an ambiguous model upon which to base a uniform research practice. For an elaboration of this point, see Wachelder (1992), pp. 27-22, and Clark (1995).

Figure 2. Number of Ph. D. degrees awarded, 1980-95



SOURCE: Vereniging van Samenwerkende Nederlandse Universiteiten (VSNU), *Kengetallen Universitair Onderzoek 1996/1997*. Utrecht.

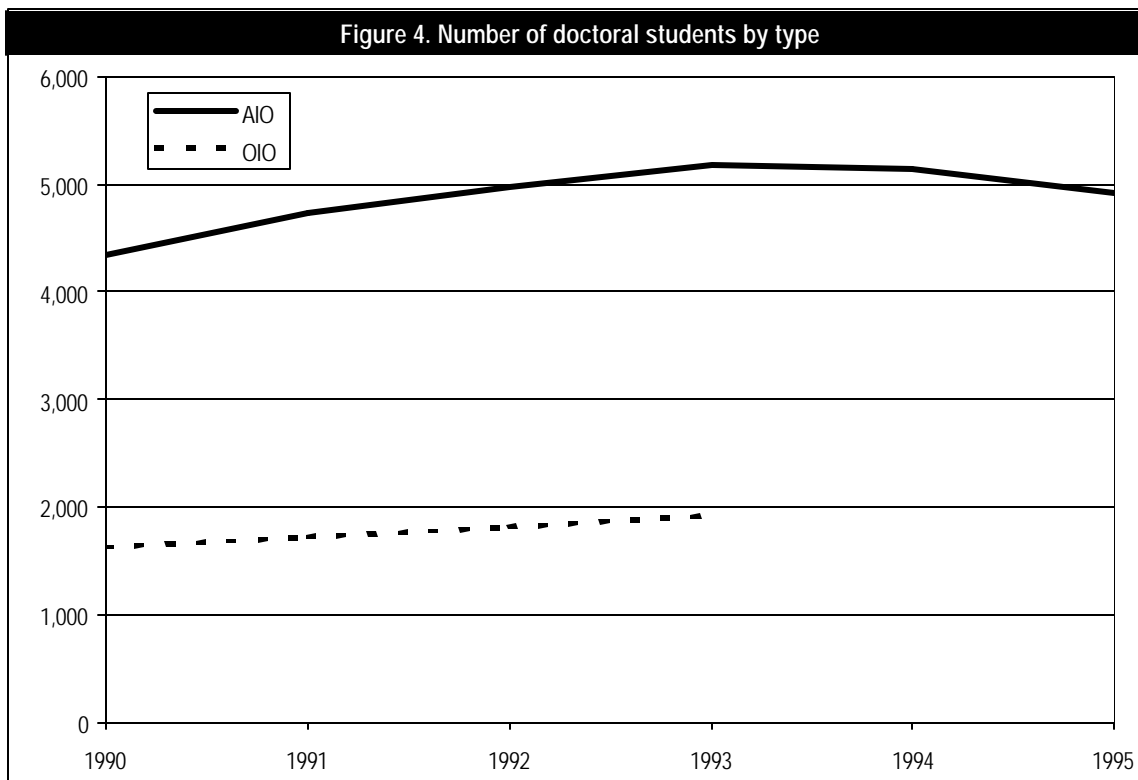
Figure 3. Breakdown of Ph. D. degrees awarded by discipline



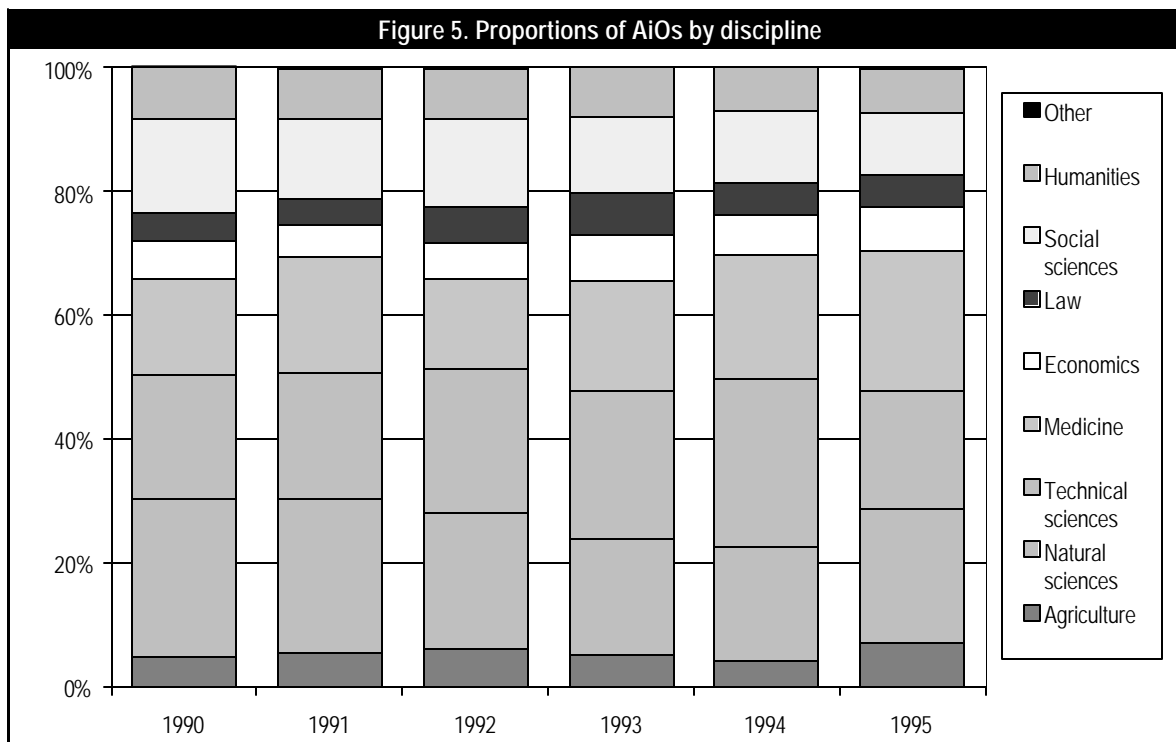
SOURCE: Vereniging van Samenwerkende Nederlandse Universiteiten (VSNU), *Kengetallen Universitair Onderzoek 1996/1997*. Utrecht.

Figure 4 presents the number of doctoral students by type (AiO and OiO). Figure 5 shows the proportion of AiOs in various disciplinary fields. Female participation in

doctoral education is reflected in figure 6: the participation of women in AiO positions has gradually increased from 29 percent in 1990 to 35 percent in 1995.

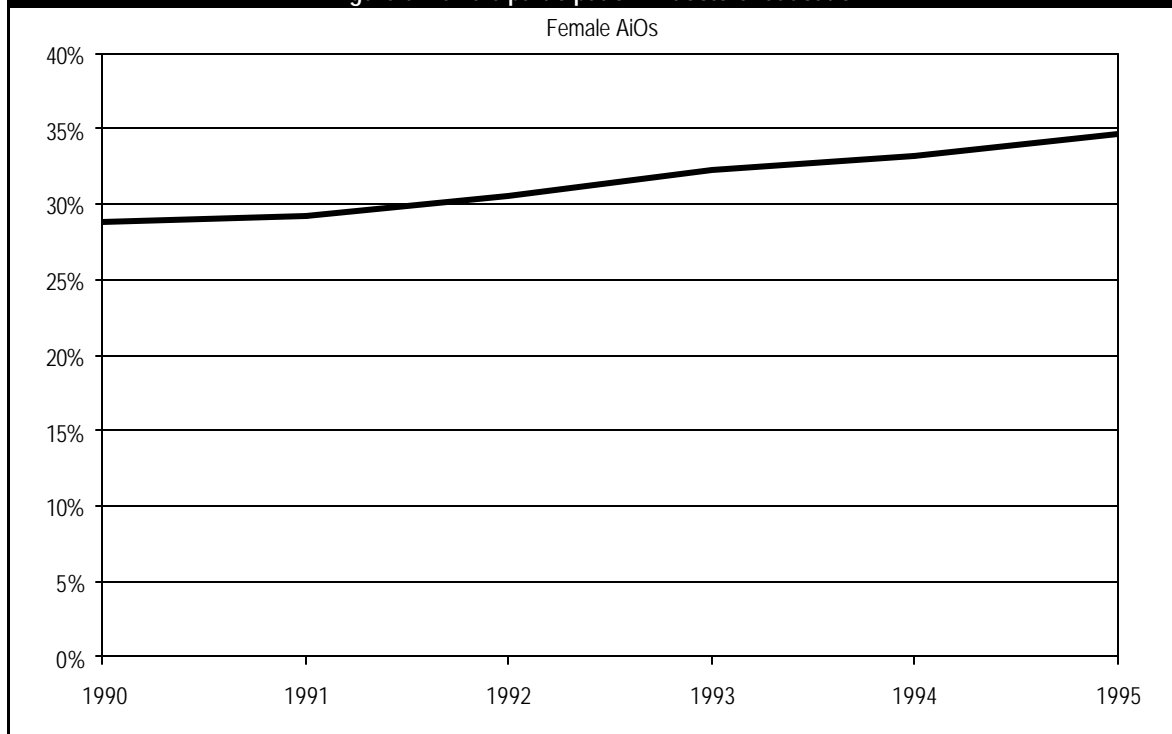


SOURCE: Vereniging van Samenwerkende Nederlandse Universiteiten (VSNU), *Kengetallen Universitair Onderzoek 1996/1997*. Utrecht.



SOURCE: Vereniging van Samenwerkende Nederlandse Universiteiten (VSNU), *Kengetallen Universitair Onderzoek 1996/1997*. Utrecht.

Figure 6. Female participation in doctoral education



SOURCE: Vereniging van Samenwerkende Nederlandse Universiteiten (VSNU), *Kengetallen Universitair Onderzoek 1996/1997*. Utrecht.

In the Netherlands, 7 percent of all Ph.D. candidates finish their degree within the nominal time of 4 years; after 5 years, this proportion is 35 percent; after 6 years, 55 percent. Eventually, 80 to 85 percent of Dutch candidates obtain a doctoral degree (VSNU 1996).

## DOCTORAL REFORMS

As mentioned in the previous section, government has moved into the business of doctoral education since the 1960s. It goes beyond the scope of this paper to describe the various policy developments that have occurred since then. We present here the main points of discussion that can be considered important impetuses to change in the doctoral system in the Netherlands.

## THE FUNCTION OF DOCTORAL TRAINING AND THE DOCTORATE

As university education massified and began to cater to a wide range of labor market positions, a discussion emerged to accommodate research training in a separate program. This implies a break with the traditional view, particularly in the social sciences and humanities, of the doctorate as a life-long masterwork. Instead, the doctorate becomes a proof of one's abilities to conduct indepen-

dent research. Still, the criteria used to judge a doctorate (an original piece of research usually written as a monograph) stem from the early tradition and not from this new conception of doctoral training.

## STRUCTURE AND DURATION OF TRAINING

Van Hout (1988) notes that two different models of doctoral training underlie the Dutch policy discussions. The first involves a 3- to 4-year period of work on a dissertation as a temporary staff member at a university. The second model consists of two stages, a 1-year student assistantship and a 2- to 3-year temporary assignment to write a dissertation. These models reflect disparate opinions as to what the time to degree should be. Until the introduction of the AiO system (see below), time to degree did not drop considerably, although the sciences were better able to restrict time to degree than the social sciences and humanities.

## THE EMPLOYED EDUCATIONAL CONCEPT

Two educational models can be distinguished in the history of Dutch doctoral education. The idea of learning by doing (the apprenticeship model) prevails in early policy documents and laws. The professional model features more explicitly in the policy documents of the 1980s. The

incorporation of coursework elements is motivated by the desire to shorten time to degree, to bring down attrition, and to be attuned to international developments.

## ACCESSIBILITY OF GRADUATE EDUCATION AND SELECTION OF CANDIDATES

As research training became a separate tier in university education, the issue of selection came to the fore. Usually, selection was considered to be based on individual competencies—although more random approaches have been proposed in the interest of greater egalitarianism (Sonneveld 1996, p. 34). The appropriate amount of first tier students to enter second tier education (more or less), and the selection procedures employed (open competition with equal chances or institutionally based competition less subject to objective criteria), were subject to discussion during almost all policy phases.

We here discuss two important, relatively recent, reforms in the Dutch doctoral system. The first regards the introduction of the AiO system in 1986; the second, the introduction of a system of graduate schools in 1991.

**AiO System.** Up until 1984, policy discussions on research training were almost a side effect of discussions on the organization of university education in general, rather than arising from perceived problems or systemic analysis of doctoral education. In 1984, a policy paper on doctoral education (Parliamentary Proceedings 1983-84, pp. 9-13) stated that the implementation of the second tier in general faced a number of problems. Concerns were expressed about the implementation of the so-called second tier as if it were a continuation of the first tier (i.e., first degree) education; about the lack of coherence in second tier program offerings; about inappropriate accessibility and selection mechanisms; and about the high expenditures in the second tier. With regard to research training specifically, the document expressed doubts about the value of the 1-year *onderzoekersopleiding* (the researcher-student) to the labor market. The policy paper suggested providing advanced research training by way of active participation of the candidates in university research and, to a limited extent (less than 25 percent), in teaching and administration. The idea was expressed of creating a separate employment position for the doctoral candidate. This position would comprise a 4-year appointment as a research trainee; this was the genesis of the above-mentioned AiO and OiO positions.

In the act that followed the policy, the AiO was introduced as a distinct academic position.<sup>3</sup> Regulations proscribing the position were published a year later. In summary, these comprised the following (Staatsblad 1986; see also Van Hout 1988, p. 15):

- The AiO has a temporary appointment in order to receive advanced scientific education.
- The objectives of the appointment are determined explicitly.
- The AiO usually holds his or her position for 4 years.
- The AiO conducts scientific research and records the results in a dissertation; the extent of this work, including instruction and supervision time, consumes at least 75 percent of his/her appointment.
- An instruction and supervision plan is drawn up for the AiO, and this plan is evaluated and adjusted after a year. In this plan is specified (1) what knowledge and skills are to be acquired and how, (2) who supervises the AiO, and (3) the number of hours the AiO is entitled to receive in personal supervision.
- After a year, an evaluation is conducted on the basis of the instruction and supervision plan. The university boards determine the evaluation procedures and criteria to be employed.
- At the end of the contract time, the AiO receives a certificate that reflects an overview of his/her publications, the education received, and his/her contributions to teaching.
- For the part of the appointment for which the AiO receives instruction and supervision (and thus does not conduct “productive labor”), he/she does not receive salary. This is specified for all AiOs in fixed percentages.

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<sup>3</sup>AiOs are employed by the universities. The Dutch Research Council [not the same term used earlier in text] also employs doctoral candidates, under slightly different employment conditions; these are called researchers in training [not the same term used earlier in text] (OiO).

Although it is still possible to write a dissertation outside the AiO system, the regulatory framework uniformly structures the position of the doctoral candidate for all disciplinary fields. Of note is the status of the instruction and supervision plan: instruction—in addition to “learning by doing”—now occupies an important, formal place in the process leading to the doctorate.

**Graduate Schools.** The AiO system as such did not provide adequate mechanisms to shape the second tier of higher education satisfactorily. In March 1990, the Dutch minister of Education and Sciences established the Committee Rinnooy Kan (named after its chairman). This committee was tasked with investigating the creation of research schools. On the committee’s establishment, the minister formulated five reasons for the development of research schools (Parliamentary Proceedings, 1990-91, p. 5; AWT 1994).

- There is a need for more structured research training. The introduction of the two-tier structure resulted in an accessible first tier limited in duration to 4 years, and a selective second tier that is expected to provide high-quality research training. As the AiO is expected to complete a dissertation in 4 years’ time, a structured and well-supervised training trajectory is necessary.
- The Dutch society and economy are developing into a knowledge-intensive system. As a consequence, there is a need, both in the private and public sectors, for highly educated people—not only for first-tier-trained individuals, but also for those who have received further (research) training.
- Although research has always been an internationally oriented activity, it is expected that the internationalization of research will continued to grow. Researchers will become more mobile, and excellent centers of research will attract these researchers across borders. This calls for a reinforcement of the Dutch infrastructure.
- In order to operate internationally, sparse and scattered research capacity must be concentrated and fragmentation avoided. It is necessary to generate critical mass through cooperation among universities and other research institutions.

- Current governmental arrangements do not guarantee selectivity, which is the prerequisite for ensuring quality of research, researchers, and research training. More emphasis on selectivity in the research system is needed.

As expressed in these five points, the reason to establish research schools not only lay in the desire to give shape to research training—although this can be seen as the original motive (Ritzen 1990, p. 315; and Hazeu 1991, p. 112). The research school was also seen as a vehicle for stimulating the emergence of research centers of excellence to operate on an international scale.

In its report, *Vorming in Vorschein* (1990), the Rinnooy Kan Committee recommends a heterogeneous system of research schools, which would allow the different disciplines to retain their specific characters. The committee sees the university as the primary institution responsible for the research school. The universities serve as gatekeepers for the multitude of initiatives that may emerge at the faculty and departmental levels. Nevertheless, the committee also expects that a large number of research schools will develop (“between 50-150”). These schools should compete for resources from science foundations, industry, and European funds. Although the committee rejects to a large extent the concept of uniformity, it does formulate characteristics “that should be typical of all research schools” (Rinnooy Kan Committee 1990, p. 6). According to these characteristics, a research school should:

1. train individuals to become independent researchers;
2. be a high-quality research center;
3. be an independent organizational unit with budget responsibilities;
4. be affiliated with at least one university, but usually with more (university) institutions;
5. be of adequate size, so as to benefit from economies of scale;
6. carefully select research proposals and research assistants;
7. guarantee supervision and outstanding educational quality;

8. formulate a policy on postdoctorate positions;
9. have a good nexus with the first tier; and
10. be accountable and conduct evaluations.

The report explicitly reflects the initial call to create a satisfying structure of research training, but it also foresees the development of *topinstituten* (centers of excellence) as a means of securing high-quality research in selected areas. This latter aspect is captured in a proposal (the Snellius Program) to select two to three excellent research schools each year. These schools would receive extra financial support for a period of 5 years.

From the governmental standpoint, research schools are defined as centers of high-quality research in which structured training is offered to young researchers (Parliamentary Proceedings 1990-91). The reasoning behind this is that good training of researchers can only be conducted in an environment of high-quality research. The system of research schools should give impetus to high-quality research and education. Therefore, the minister decided to stimulate the development of a broad, yet selective, system of research schools, from which—eventually—should develop a limited number of centers of excellence. The government standpoint agrees in its main points with the advice of the Rinnooy Kan Committee. The government envisages a diverse system of research schools that share a number of common characteristics. The characteristics suggested by the Rinnooy Kan Committee are endorsed, but complemented on a few points. The minister acknowledges the importance of sufficient critical mass; he adds, however, that this consideration should not prevail over functional coherence. Therefore, the scale criterion is complemented with the condition that the school should have a sufficiently homogeneous training and research program. Another aspect in which the government standpoint adds to the committee's criteria regards the need for researchers in the labor market. In this respect, the minister stresses the importance of postdoctoral positions in a research school. Furthermore, the government stipulates that research schools should have budget responsibility; to this end, sufficient funds are to be allocated from the hosting universities to the research schools.

The government subscribes to the idea that research schools should be developed bottom-up. In order to allow this, yet to ensure quality, the government proposes a two-

step procedure for the establishment of recognized research schools. At the faculty level, initiatives are undertaken to establish a research school. The executive board of a university—or boards, if more than one university is involved—determines whether such an initiative complies with the aforementioned criteria and may give the research school a legal foundation as a research institute. Also, the university boards sign a contract as to the resources available for the school for a period of at least 5 years. The next step toward recognition lies outside the university context. The minister has delegated the task of formal recognition of research schools to the Royal Dutch Academy of Sciences (KNAW). For this task, an independent committee (organizationally linked to the KNAW) named *Erkenningscommissie Onderzoekscholen* (Commission for the Recognition of Research Schools—ECOS) has been assigned. ECOS has designed, on the basis of the 10 characteristics identified by the Rinnooy Kan Committee, a protocol designating a procedure with which research schools should comply in order to achieve formal recognition.

By March 1998, 119 research schools had been registered in virtually all disciplinary fields (VSNU 1998, p. 6). ECOS has recognized 107 of these schools (table 1). Although the system of research schools is envisaged to include all doctoral candidates, participation rates differ by field. There is also variation in the level of development of the schools across these fields. The total number of AiOs and OiOs participating in research schools is around 7,460 (as of March 1998).<sup>4</sup>

## PATTERNS OF SUPPORT

Dutch doctoral candidates are basically funded by three different sources, called first, second, and third money flows (Koelman, Vossensteyn, and Jongbloed 1998). The first flow is supplied by the Ministry of Education, Science, and Culture to the universities. The universities pay their academic staff and AiOs from these funds. The second flow of funds is allocated through the NWO. From these funds, the OiOs are paid. The third flow of funds is acquired through contracts with government, nonprofit organizations, private companies, charitable boards, and the European Community. In addition to these sources of support, doctorates can be financed by other employers or on their own.

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<sup>4</sup>Ten research schools did not submit quantitative information on this matter.



**Table 1. ECOS-recognized research schools in the Netherlands**

Discipline	1992	1993	1994	1995	1996	1997
Total.....	19	24	62	86	98	107
Agriculture.....	0	1	2	5	5	5
Economics.....	1	1	1	1	2	3
Health sciences.....	5	6	12	13	15	15
Humanities.....	1	1	6	11	14	14
Law.....	0	0	0	1	1	2
Natural sciences.....	7	8	21	25	27	28
Social sciences.....	1	2	10	15	17	18
Technical sciences...	4	5	10	15	17	22

SOURCE: Vereniging van Samenwerkende Nederlandse Universiteiten (VSNU), *Kengetallen Universitair Onderzoek 1998*. Utrecht.

Table 2 gives an overview of the sources of funding for doctoral candidates by money flow type (that is, the proportions of doctoral students using different sources of support). Table 3 shows the sources of support by field of study. These data should be taken as indicative rather than precise. The figures are taken from a study by Hulshof, Verrijt, and Kruijthoff (1996, p. 66) and reflect the characteristics of a survey population of 2,652 respondents.

**Table 2. Funding sources for doctoral candidates (percentages)**

Funding source	Total	AiO	OiO	Doctoral univ	Doctoral ext
1 <sup>st</sup> flow.....	46	81	6	47	9
2 <sup>nd</sup> flow.....	29	12	88	29	25
3 <sup>rd</sup> flow.....	27	21	8	31	17
Research inst.....	11	4	7	14	8
Other empl.....	7	2	4	3	39
Private.....	10	2	1	8	41
Total respondents...	2,652	862	455	1,086	248

SOURCE: Hulshof, Verrijt, and Kruijthoff (1996), p. 66.

**Table 3. Funding sources by field (percentages)**

Funding source	Agriculture	Natural science	Tech. science	Medicine	Economics	Law	Social science	Humanities
Total respondents...	108	868	327	447	137	85	401	278
1 <sup>st</sup> flow.....	37	42	47	36	69	81	58	52
2 <sup>nd</sup> flow.....	34	44	30	31	18	20	26	31
3 <sup>rd</sup> flow.....	33	16	35	41	12	6	20	8
Research inst.....	15	8	9	15	7	6	8	5
Other empl.....	5	5	11	6	8	1	6	4
Private.....	3	2	4	9	13	8	14	21

SOURCE: Hulshof, Verrijt, and Kruijthoff (1996), p. 66.

AiOs and OiOs receive salaries according to a special salary scale. In the first years of their appointments, salaries are cut back to compensate for the training they receive. Table 4 shows the monthly incomes for each year of their appointments (as of January 1, 1998).

**Table 4. Monthly incomes of AiOs and OiOs**

Year of appointment	Salary
1 <sup>st</sup> year.....	DFL 2.184,--
2 <sup>nd</sup> year.....	DFL 2.495,--
3 <sup>rd</sup> year.....	DFL 3.053,--
4 <sup>th</sup> year.....	DFL 3.899,--

SOURCE: Hulshof, Verrijt, and Kruijthoff (1996), p. 66.

Recently, the labor market situation forced universities to change their financial support of AiOs. In 1995, a number of Ph.D.s coming out of the AiO system could no longer be absorbed by the (academic) labor market. The universities were, however, obliged to make unemployment payments, which signified an important financial loss. Some universities decided to introduce Ph.D. grants instead of employment. This would discharge them of the responsibility of making unemployment payments. The results for doctoral candidates can be imagined: lower incomes, poorer benefits, and a feeling of being unappreciated for their work.

In the following years, however, the labor market situation for academics improved considerably. Almost all universities abandoned the grant system, which is now only in place for Ph.D. programs that aim to attract international candidates. Instead, as AiO positions became difficult to fill, universities have started to complement AiO salaries to a level comparable to that for other academic staff members. This phenomenon is particularly commonplace at the universities of technology.

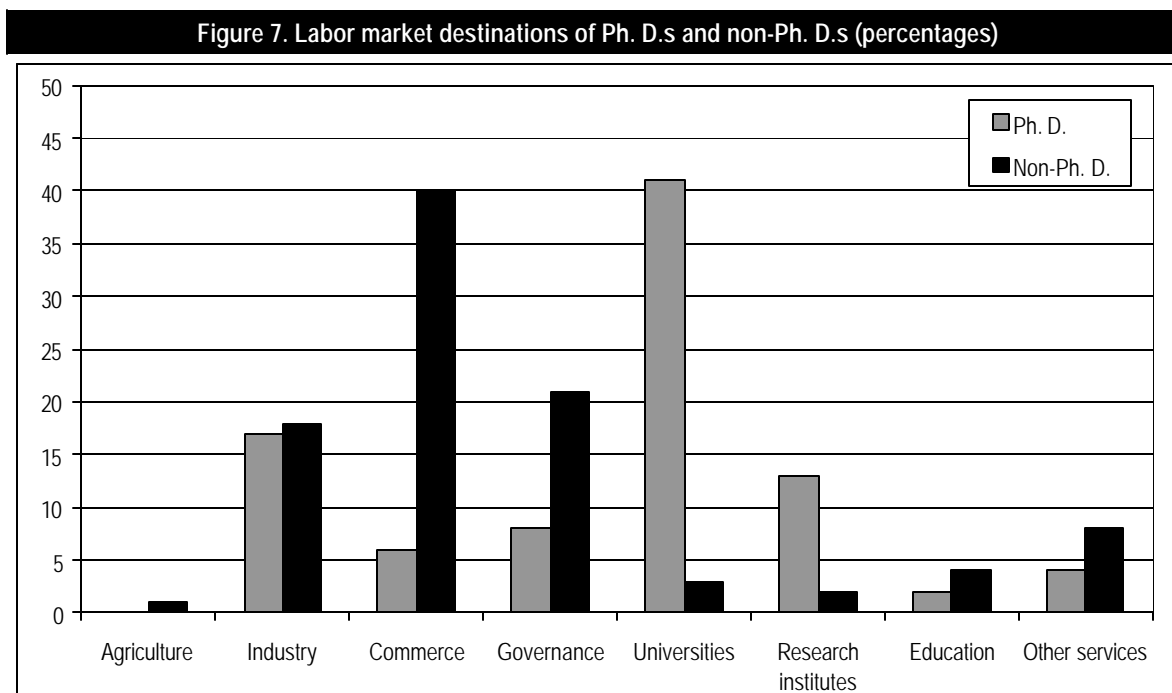
The recent developments in conditions of support illustrate the ambiguity that exists around this issue. AiOs and OiOs basically occupy a hybrid position at Dutch universities. On the one hand, they are students who receive training and supervision. On the other hand, they are considered the engine of scientific work. The financial support structure that was introduced in the framework of the AiO system basically reflects this hybrid position. But external forces, such as the labor market and the internationalization of postgraduate training, are increasingly putting pressure on this situation.

## EMPLOYMENT PATTERNS

The labor market position of doctoral degree-holders has been the subject of discussion since the mid-1990s. The Dutch academic labor market was perceived as being unable to absorb the increasing number of young doctoral degree-holders aspiring to an academic career. At discussion seminars on this topic, doctoral candidates tended to refer to themselves as a “lost generation.” In 1996, the Ministry of Education, Culture, and Science commissioned a study of the labor market situation for doctoral candidates (Hulshof, Verrijt, and Kruijthoff 1996).

Unemployment among doctorate-holders appeared to be less than among non-Ph.D.s: 6 percent versus 14 percent. For those Ph.D.s who obtained their degree through an AiO or OiO position, the unemployment figure is slightly higher: for AiOs, 9 percent; for OiOs, 12 percent (Hulshof, Verrijt, and Kruijthoff 1996, p. 51). This picture, as compared to the Dutch labor force overall, is not negative. However, employment conditions in terms of salaries and job security are generally less favorable for Ph.D.s.

Figure 7 shows the labor market destinations of Ph.D.s as compared to non-Ph.D.s. Clearly, most doctorate-holders find work in research and teaching positions at universities or research institutes (54 percent) or in industry (16 percent). There is, however, a move away from academia and into other positions. In 1983, 70 percent of Ph.D.s worked at universities; in 1995, only 38 percent were employed by a university. Although 70 percent of doctorate-holders have a research job—a figure that has been quite stable since 1983—most Ph.D.s exchange this type of work for another at some point along their career path.



SOURCE: Hulshof, Verrijt, and Kruijthoff (1996), pp. 65-66.

Ongoing discussions of the labor market for Ph.D.s have gradually become less informed by pressing labor market issues, which allows for a more fundamental discussion of the labor market itself. There is a move toward discussing the consequences of a broader labor market orientation for doctoral education. If replenishment of the professorate is not the main labor market objective for the Ph.D. degree, then how should doctoral education (which is still very much focused on academic work after doctorate award) meet the societal needs of highly educated professionals? This issue fundamentally affects the orientation of doctoral education: toward the market or toward academia (see Bartelse and Hulshof 1996)? Subsequently, the question is being asked as to what implications this changing orientation will have for the process of acquiring a doctorate. If a broader labor market orientation is accepted, then the qualifications required for a Ph.D. graduate may need to be reconsidered. There are a few experiments with the “professional doctorate”—i.e., degrees for employed professionals—but the issue is still a sensitive one.

## PATTERNS OF INTERNATIONAL MOBILITY

Systematic data on the number of foreign doctoral students in the Netherlands and the number of foreign doctoral degrees earned by Dutch citizens are not available so far. Our impression is that Dutch universities increasingly attempt to attract foreign Ph.D. students. Particularly in the sciences, which face difficulties in filling vacant doctoral positions, the number of foreign doctoral students is increasing.

At the national and supra-national levels, several initiatives have been developed to stimulate international mobility of doctoral candidates (see also the German country report included in this volume). At the initiative of the Dutch Minister of Education and Science, Belgium, France, Germany, the Netherlands, and—later—Denmark established an international advisory committee on new organizational forms of graduate research training. The committee was established with the following terms of reference: to provide an opinion on the proposal of the Dutch Committee on Graduate Schools, particularly in light of European and international aspects; “to consider and compare the new organizational forms of graduate research training on a doctoral level currently emerging in many European countries...to provide indications and recommendations that allow for more cooperation at the level

of graduate training; and to sketch ideas for the further evolution of these new systems of graduate training” (De Wied 1991, p. 9). The cooperation that evolved from this initiative has led to a letter of interest signed by Belgium, Denmark, France, Germany, and the Netherlands in January 1996. These countries have committed themselves to support the exchange of doctoral candidates and to inform each other of developments regarding doctoral programs and graduate schools.

The European Union is stimulating international cooperation in the area of doctoral training. In the post-war decades, international exchange often took place on the basis of personal contacts between individual professors. Recent visions of the European Union and of several European governments see these exchanges as insufficient (Blume 1993). The scope of European Community action in the field of education is defined in article 126(1) of the Maastricht Treaty (EU 1992): “The Community shall contribute to the development of quality education by encouraging cooperation between member states, while fully respecting the responsibility of the member states for the content of teaching and the organization of education systems and their cultural and linguistic diversity.” Efforts to cooperate in the area of research training so far focus on mobility of researchers, particularly through the Training and Mobility of Researchers program, which is part of the European Commission’s Framework Programmes. There have been suggestions to create a European doctorate<sup>5</sup> and to establish international, or rather, European centers for research training. As yet, however, these suggestions have not led to more extensive forms of cooperation in the area of doctoral training.

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<sup>5</sup>See EC (1995). The European doctorate will be accorded under the following conditions:

- If at least two professors from two higher education institutions of two European countries, other than the one where the Ph.D. thesis will be defended, have given their judgment.
- If at least one member of the jury comes from a higher education institution in European countries, other than the one where the Ph.D. thesis will be defended.
- If part of the defense takes place in one of the official languages, other than the one(s) of the country where the Ph.D. thesis will be defended.
- If the Ph.D. thesis has been prepared partly as a result of a period of research of at least one trimester spent in another European country.



# ACKNOWLEDGMENTS

The authors wish to thank Petra Boezeroy, Frans Kaiser, and Anne Klemperer from the Center for Higher Education Policy Studies Higher Education Monitor Unit for the statistical information provided.



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