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Characteristics of science coverage in Soviet Estonian  
newspaper *Rahva Hääl*

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# 1. Introduction

A strong guidance by science has often been seen a fundamental principle of how the Soviet Union and other socialist countries functioned, to the point that these societies have sometimes been idealized as a sort of New Atlantis, a scientifically run utopia devised by Sir Francis Bacon:

*But the most complete realization of [Bacon's] aims, so far, is to be found in the new socialist states, where social life has been reorganized on scientific lines, and science is pursued according to a comprehensive plan, for the endowment of human life 'with new discoveries and powers'. (Crowther, 1960: 4)*

Given the importance of science in the socialist societies, whether illusionary or real, many aspects about the role of science have been under scholarly attention, especially its relationship with Cold War politics, including the space race and the development of nuclear weapons. However, the representation of science in the Soviet media seems so far to have eluded academic analysis.

This dissertation aims to start filling the gap, looking at the science coverage in *Rahva Hää* (*People's Voice*), the official voice of the Communist Party in Estonia. Using both quantitative and qualitative analysis this dissertation outlines the characteristic features of Soviet science news and explores the implications of ideological control over science and journalism, taking Soviet Estonia as a sample case.

The main research question of this paper is: What are the characteristic features of science articles in the Soviet press? A number of relevant sub-questions derive from the main research question:

- What discourses prevail in the science items in the Soviet press?
- Which characteristics serve as a tool for Soviet ideology?
- How was science itself communicated and framed?
- Was there any temporal change in the amount and style of coverage?

The proposed hypothesis is that science coverage is strongly shaped by Soviet ideology and articles rather serve as an ideological tool than communicate science.

The first part of the dissertation will give the theoretical framework for this research, looking at the few previous studies that have touched upon the subject. This chapter will also give an overview of how Soviet science and press were organized and what were seen as their roles in the socialist society. Then the specific context of Soviet Estonia and the newspaper *Rahva Hää* is introduced.

The next chapter will introduce the methodology used. The second half of the dissertation will present and discuss the results of the study, first painting a broad profile with quantitative analysis and then having a closer look on the characteristics and used discourses with qualitative analysis. Special attention will be paid on space articles which form a significant part of the science coverage.

This study is able to provide us with no more than a few initial insights to the Soviet science communication. Further research is definitely needed for this important chapter of our recent

history. Not only is this an interesting historical episode but it can be used to understand some aspects of current science communication in Eastern Europe and also help to understand the workings of science, media and science media in other closed societies, such as China.

## 2. Background

### 2.1 Previous studies

Science coverage in the Soviet media has been remarkably little studied. While science issues have been studied, these have mainly been issue-centred analyses with special attention to propaganda, politics or policy, and very few have looked at science coverage in the media more generally. In fact, as Kirpal & Ilsmann (2004) also note, the studies looking at the media content of the socialist era often do not regard science as a special category. This is also true for the few sociological studies conducted in Soviet Estonia that surveyed audience's expectations on local newspapers.

Only two studies about science in the media of a socialist country could be found, both very different in their approach<sup>1</sup>.

Bauer *et al.* (2006) have performed a longitudinal comparative study of British and Bulgarian science coverage between 1946 and 1995. They looked at the main Bulgarian newspaper *Rabotnicheskio Delo* and the biggest British national quality daily *The Daily Telegraph*, measuring the intensity of coverage, but also what they call 'dramatic devices': topics, controversy, evaluation and mobilization of the readers.

They looked for long-term trends in the science coverage and found similar patterns on both sides of the Iron Curtain, but also notable differences. Science was much less reported in Bulgaria: on average 119 articles per year, meaning one science article for every 15 news

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<sup>1</sup> Kirpal & Ilsmann also refer to another study, a comparison of science coverage of the East and West German newspapers in 1976. See: Gruhn, W., *Wissenschaft und Technik in deutschen Massenmedien. Ein Vergleich zwischen der Bundesrepublik und der DDR*, (Erlangen, 1979). This book, however, is not available in UK libraries.

pages, compared with one science item for every two news pages in UK. There was also much less year-to-year fluctuations in the coverage in Bulgaria, pointing to a tight control over media that makes it less responsive to events.

Despite the different contexts, the intensity of coverage in both countries draws identical waves: rising from an after-war low to a peak in the first half of the 1960s, then declining much of the 1970s and starting a new rise in the 1980s. They also found parallel trends in the degree of mobilization, or appeal to action. It was higher than average in the 1950s and lower in the 1960s. Calls for public activism increased again in the 1970s, peaking in the middle of the 1980s.

There were also similarities in coverage of some topics. Nuclear power was widely covered in the 1950s and 60s, soon joined in the headlines by space exploration. Environmental news gained prominence in the 1980s, as did computing technology. Yet Bulgaria did not show the trend of 'medicalization of the science news' that occurred in the West.

In Bulgaria the coverage of science and technology was more positive than in UK, but shows a linear trend towards becoming more negative. The enthusiasm, as expressed in optimism and advocacy, was in Bulgaria highest after the war, calmed down in the middle period and gained strength in the 1990s. During the socialist period, risks connected to science were rarely reported. Controversy in Bulgarian media was high in the end of the Stalinist era and is connected to a campaign against capitalist science and technology.

The authors conclude that the general pattern is consistent with the conception of a totalitarian and closed Bulgaria: "Press coverage of science depended on the current policies of the ruling

Communist Party, and no other social input was tolerated. The Marxist-Leninist model of modernization pushed the role of science to hypertrophy and made it the locomotive of social progress. The Bulgarian party press circulated overwhelmingly optimistic and celebratory news of science. Science was the unquestioned benefactor of the society, indispensable for social progress.” (Bauer *et al.*, 2006: 121)

The authors suggest the similarities in the intensity of science coverage could be explained by economic factors or other issues outcompeting science over limited media space, but emphasize these to be mere speculations and the aim of the study to be the demarcation of the field and opening the door to other similar longitudinal comparative studies.

As a first of its kind, the study provides valuable data and sets an model for methodology. However, one might question whether the comparison of a Western and a Socialist country via content analysis is reasonable for media features such as evaluation of science or controversies. The media systems are inasmuch substantially different in their functions as instruments of influence and expressions of public opinion that there is doubt about how meaningful these comparisons can be. While described with the same term, the substance and meaning of both is likely to be significantly different. Qualitative analysis is likely to deliver more meaningful results.

The other paper (Kirpal & Ilsmann, 2004) looked at TV science magazines in German Democratic Republic. While the conditions for science and the media in East Germany were not identical to those of Soviet Union, the similarities are sufficient to consider their work as a valuable input to our research topic.

In their study Kirpal & Ilsmann looked at four shows from the period 1971 to 1976 (three episodes of the show *Neue Fernseh-Urania* and one episode of *Umschau*). The authors expect to see in this period the repercussions of the 8th Party Congress (1971) that adopted a new economic policy to improve the wellbeing of the citizens.

The goal statement of the shows was overtly ideological. The chief TV official Heinz Adameck said about *Neue Fernseh-Urania*: “It will focus on big problems of the mankind that are only solvable by socialism, from the fight against hunger to environmental protection,” (cited from Kirpal & Ilsmann, 2004: 12). This line was also evident in the programs. “Most contributions feature direct or indirect political statements, which should prove the superiority of socialist systems over capitalism. The situation of capitalist countries is thereby one-sidedly depicted as negative and that in socialist countries idealizingly positive.” (*ibid.*: 15).

Kirpal & Ilsmann note, that the shows were not educational or entertaining, but rather serving the function of being practically relevant. They are characterized by a positive tone towards science, which is not questioned and controversies are not discussed. The reporting builds a harmonic view of the world and provides clear answers. The authors describe their paper as a ‘pilot study’ and say while the intention of the state and party officials to use science programs for legitimating their leadership and policies is beyond doubt, the question to be tackled next is its effect on the viewers. Being brief and based on only four shows, the paper is only able to sketch a few basic characteristics of the science programs, without providing much detail.

## 2.2 Soviet science policy

In Soviet Union science was declared to be one of the main driving forces of progress, the Marxist concept that was deeply embedded in Soviet ideology. This means the discussion of science was always surrounded by declarative and heavily ideology-laden slogans, like: “The construction of a new society is unfeasible without the immediate involvement of science in the process.” (Köörna, 1986: 5). And: “In a socialist society the scientific and technological progress is eventually given proper orientation corresponding to the needs of the people and the society as a whole. On the other hand, socialism creates the most favourable conditions for the development of science.” (*ibid.*)

Science as a tool for ‘the construction of communism’ was the dominant discourse throughout the Soviet period. That, however, took different shades in different periods. By 1960 the Soviet science had been able to transform its practices that were imposed by the Stalinist regime. These changes introduced more freedom into the scientific activities. According to Ivanov (2002), the Stalinist “science was supposed to adapt, at least superficially, to the demands of the official philosophy of dialectical materialism, but after the debates of the 1950s, it became the task of the philosophers to adapt their interpretations, at least superficially, by incorporating the lessons of the newest scientific achievements.”

Also, participation by Soviet scientists in international congresses and conferences, though limited, became possible, and most foreign scientific literature became freely available (Medvedev, 1979: 62). “However, the very system of political control over [the] exchange [of information], together with the censorship and the delays in receiving even scientific information that is openly available in foreign academic and scholarly journals, put Soviet scientists in a rather difficult position,” Medvedev adds (*ibid.*: 118).

Researchers were also able to shift the relationship between science and practice. “The post-Stalin reformers succeeded in designing and establishing a new concept of ‘fundamental science’, which justified institutional alienation of the most advanced academic research from the process of technological modernization,” Ivanov (*ibid.*: 318) writes. But the political emphasis remained on applied sciences and many Party congresses heard demands for quicker adoption of scientific results to production. For example, in 1966 Brezhnev stated: “Our science has won great prestige and has incontestable, great accomplishments to its credit. However, mention should also be made of the deficiencies that hold up its development. The gravest of these is the slow introduction of the results of scientific research into production. There is an unjustifiable gap between theoretical research and its technological and design development.” (cited from Harvey *et al.*, 1972: 31).

The organizational structure of science was also reformed accordingly. After the criticism of “duplication of effort and wasteful use of scientific resources” first, in 1961 a State Committee for Coordination of Scientific Research was established and in 1963 a number of scientific institutes pursuing applied research were transferred under the industrial-branch state committees and other administrations (Harvey *et al.*, 1972). This would serve to place science “in direct contact with production, in order to bring science closer to production” (*ibid.*). The national and union Academies of Sciences remained to co-ordinate and direct research in natural and social sciences. In 1971 the continuing dissatisfaction led to the introduction of new party control over all scientific research. Party instrumentalities were given the right to control the work of the administration of all scientific-research institutes and higher schools (*ibid.*: 82). Again, the research policy of five year plan for 1981-85 was characterized by “the orientation to the fuller integration of research with the development of

the national economy /.../ emphasis was laid on the accelerated implementation of scientific discoveries and inventions.” (Köörna, 1986).

Privileged sectors (i.e. military complex and some 'big science' like the space program) enjoyed almost unlimited resources because Soviet leadership saw science and technology also as a road to superiority in the competition between world powers. “To the Soviet way of thinking /.../ science and technology are not merely instruments for healthy, peaceful competition and cooperation, at best designed to demonstrate the superiority of Soviet socio-economic organization, but essential means for enabling the Soviet Union to achieve supremacy on a global scale and gain its ultimate objective, i.e. the destruction of capitalism.” (Harvey et al, 1972: 2)

### 2.3 Soviet media and *Rahva Hääl*

Journalism, as many other parts of the Soviet society was organized after principles originating from Vladimir Ilyich Lenin. According to him, journalism is not only “a collective propagandist and a collective agitator, but also a collective organizer”.

“Journalism must serve as an instrument of socialist construction, giving detailed reviews of model communists' achievements, disclosing the reasons why they are successful and what economic methods they use,” he wrote (cited from *Towards a Civic Society*, 1993: 178). This led to media becoming a standard-setter, carrying examples how everyone should think, behave and act. At the same time, media was alienated from the real world: its focus was on stories that conveyed the required message, not what really happened. The media did not have to provide news but to “confirm daily that everything was fine and that development was

continuing as planned” (*ibid.*, 182). The journalist inevitably had to be a propaganda worker whose job was to manufacture reality.

Perhaps the most important tool in this process was the use of language. In a homage to George Orwell’s novel *1984* the Soviet style of communication has often been called ‘newspeak’<sup>2</sup>. This Communist jargon was full of empty signifiers, stereotypes and distorted concepts but in its totality and an almost ritual nature had a profound impact on the mindset of people. Forming the basis of Soviet power discourse, a number of methods were common to any coverage. Mainly there were methods used to suppress critical thinking and link readers mentally to the black-and-white world drawn by propaganda (Mõistlik, 2007).

Media was under strict Party control and supervision. Officially there was no censorship and the constitution guaranteed the freedoms of speech and the press (Lauk). In reality everything was watched by the Communist Party authorities and the state censorship administration or Glavlit, operating as an ‘executive hand’. The guiding principle was: what was not explicitly allowed was certainly forbidden (*ibid.*). In newspapers like *Rahva Hää* the manuscripts were censored by the editors-in-chief and by the head of the ‘party-life’ section; censors controlled the proofs and first printed copies.

For example, it was impossible to study and publish statistical information about the geographical pattern of age-related troubles and statistical evaluation of the causes of mortality. Information about problems of pollution, aviation disasters, and other forms of catastrophe – figures easily available abroad – were considered classified within the USSR (Medvedev, 1979).

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<sup>2</sup> for example, see: Thom, F., *Newspeak: The Language of Soviet Communism* (London: The Claridge Press, 1989)

Newspapers can be divided to five categories, according to the level of political control and ideological canonization (see Vihalemm & Lauristin, 1997). The top category was formed by the all-Union press and Russian-language newspapers in the Union republics. However, ninety-nine per cent of the Estonians did not read Russian-language papers. Their top source was *Rahva Hää*, which is categorized to the second group, along with other Communist Party newspapers in national languages. In these papers the ideological control was implemented more flexibly: certain local variances of interpretations and modulations of canonical texts were permitted. Even some criticism of economy could be expressed in analytical commentaries (*ibid.*). The remaining categories represented lower level (i.e. more local or specialist) media outlets.

A similar categorization can be applied to topics. To the first level of political control and ideological canonization belonged the coverage of ideological, political and historical topics of all-Union importance which could be presented only in one, official version (*ibid.*). On the second level was coverage of local ideological, political and historical topics and also economy. We find science on the fourth level along with sport, fine arts and cultural life. This was on the lowest level of official control and allowed journalists to explore the limits of permissible. Readers learned to read between the lines, to catch hints and draw parallels. The situation in *Rahva Hää* was obviously more controlled also for science coverage. But even then, journalists writing in Estonian could somewhat feel themselves protected by the language barrier from Moscow's direct ideological control and could express in the native language some nuances of attitudes, understandable for their compatriots but difficult to translate into Russian (*ibid.*).

After the rigid propaganda of the Stalinist era, Khrushchev's thaw brought somewhat more freedom and saw the return of proper journalistic form, genre and style. The system of control regained force in the 1970s, again increasingly starting to lose connection with real world. However, this stagnation meant that also the Party bureaucracy was becoming more indifferent and censorship relaxed. More critical voices emerged, still mostly writing between the lines, but paving the way for the openness of the late 1980s.

In 1960 Estonia had 55 newspapers with the total circulation of 614,000 copies. In 1980 the number of newspapers had gone down to 43 but the circulation increased to 1.19 million (*Towards a Civic Society*, 1993: 337). *Rahva Hääl* was the dominant newspaper most of the period with print runs between 155,000 and 188,000 copies (in comparison, the current most popular newspapers have a circulation between 60-70,000 copies). Its format remained unchanged – a broadsheet newspaper with four pages published every day from Tuesday to Sunday. The number of pages could be higher if 'important' material like speeches of leaders or Party congress materials needed to be published.

Some useful insights into the practices of Soviet journalists can be found in journalists' memoirs. The following excerpts are from a collection of memoirs (*Kuidas vaatad, nõnda näed*, 2009) collected and published by the Institute of Communication at the University of Tartu.

Long-time *Rahva Hääl* local correspondent Vassili Auväart: "The most important department in the newspaper was considered to be the propaganda and agitation department. /.../ Every month we had to plan at least two articles for that department. The theme of communist education and party teaching had to run through all issues. /.../

When there was another plenary, congress or session of the ECP [Estonian Communist Party] or CPSU whose decisions had to have approving statements from people of various fields of work, busy days began for us. /.../ Prevarication was ruled out by saying: this is the order from the Central Party Committee, end of discussion. /.../ In my district I had agreements with several people I knew and who had authority in their collectives, that they would sometimes, if necessary 'lend' me their name and give me data to write necessary statements.

In December 1972 the 50th anniversary of the formation of the Soviet Union was celebrated. This time the jubilee articles all had to be on a certain subject: to show Union citizens from different nationalities working, spending leisure time, celebrating, socializing with families, communication, studying together.” (*Kuidas vaata, nõnda näed*, 2009: 62-98)

Agricultural correspondent of *Rahva Hääl* and *Edasi* (most prominent local newspaper) Ülo Kalm: “Olev (Olev Anton, a renowned agricultural correspondent of *Edasi*) remembered what he heard and saw and wrote only the names of people on the edge of the matchbox. When I asked him, why he doesn't take notes, Olev replied: “Because I know what a milker does, what a tractorist does, what they say.” Indeed, everyone had the same tractors and machines, everywhere identical barns, manure scrapers and milking machines and, of course, identical problems. Everything repeated itself, only the faces were different. That was the Soviet system.” (*Kuidas vaata, nõnda näed*, 2009: 175-193)

### 3. Methodology

This study seeks to characterize Soviet Estonian science reporting with a combination of quantitative and qualitative analysis. By combining the strengths of both a more nuanced picture should emerge than by either kind of analysis separately. Quantitative analysis, while good at providing numbers and showing trends, is unlikely to help us to uncover the practices and underlying messages of these articles; and qualitative analysis, while enabling deep insights, might not clarify the position of science reporting in the wider framework of Soviet press. Since Soviet science reporting is unexplored either way this study is trying to lay down a few first tracks.

For reasons of familiarity with the context and language – Estonia is my home country – the subject of this study will be the science coverage of the Soviet Estonian newspaper *Rahva Hääli*. Being the official paper of the local Communist Party Central Committee and often publishing materials from the most authoritative sources like TASS news agency or *Pravda* newspaper, it should be a fair representative of Soviet media.

The study will look at all science reporting rather than focusing on a single theme. The vastness of the unexplored territory spoke in favour of just charting the Soviet science reporting characteristics and against having a comparative study. Comparisons between two surveyed years – 1960 and 1980 – will be made in order to point to minor trends within the overall framework but the study is not comparative in nature.

According to Bauer *et al.* (2006) 1960 and 1980 represent the approximate high and low points of intensity of science coverage on both sides of the Iron Curtain. As a more

longitudinal study was not feasible and the focus on just one year might have provided biased data, the combination of two assumed intensity extremes seemed a reasonable compromise.

### 3.1 Quantitative analysis

This study used the classical approach of content analysis (Krippendorff, 1980). The unit of analysis was one newspaper text (article or collection of articles under one headline or an article with an accompanying image). Throughout this paper, these texts are interchangeably also referred to as 'science news', 'science articles', 'science stories' or 'science items'. However, they all mean the same thing.

In this study, 'science news' was interpreted somewhat more broadly than in the paper of Bauer *et al.* They counted as science news all articles that made reference to scientific activities or knowledge, that is "mention of scientific and technological activities, presentation of scientific results, figures, experiments, procedures or equipment". (Bauer *et al.*, 2006: 104). This study decided also to include articles with prominent references to scientific institutions or scientific actors (for example, articles like "Scientists join the Party", December 21, 1960, or "The impressions of Swedish scientists about USSR", June 3, 1960); or even other institutional processes involved in or influencing science (for example, "To the participants of the first session of the Baltic Sea environmental protection commission" by A. Kossygin, the chairman of the USSR Council of Ministers, May 6, 1980). These inclusions may not directly discuss scientific knowledge but are making enough references to science to be still likely to be interpreted by the readers as part of the discourse of science. For our goal of investigating the ideologically determined aspects of science reporting it was necessary to include these articles.

In defining the boundaries of science probe coding revealed main problem areas to be industry and social sciences. In industry, especially in 1960, there was much talk about 'rationalization', the improvement of work methods and tools to increase production or make it more efficient. Although the process might in many cases involve scientific activity, 'rationalization' itself was in this study not *per se* defined as scientific. Most articles were discussing in an abstract manner the need for or benefits of 'rationalization' therefore belonging more to the economic discourse. Articles were only included in the sample if they were referring to scientific knowledge.

Even more difficult proved to be the area of social sciences, especially in ideology and history. Many of these articles had authors who were identified to have a scientific degree or position. Again, the content was used as a criterion: it was included if it was framed as being scientific, made references to scientific activities etc. Naturally, many of such decisions are of subjective nature and the absence of other coders does not allow establishing the level of reliability of the coding. Much help in making judgements was from the experience gained from the previous browsing of the newspapers of the era and the test coding, performed to help to refine the coding sheet and identify possible problematic issues. Articles were coded manually to an Excel file over a week in the Tartu University Library.

For the study 8 randomly constructed weeks were taken from both years. 48 random numbers between 1 and 51 (the number of full weeks on both years) were generated in Excel. These represented weeks of the year, e.g. number 1 was the first full week of the year and 51 the last. Then a weekday was designated to each of those weeks in order to select the newspaper issues for the sample: first 8 of the randomly generated numbers were paired with Tuesdays, the next 8 with Wednesdays etc. The same set of random numbers was used for both years. If,

for example, the 10th random number was 34 then the Wednesday of the 34th week of the year was chosen for the sample: August 24 from 1960 and August 27 from 1980. The numbers and dates are listed in Addendum 1. If on the assigned day the newspaper was not published it was not replaced with any other issue but just omitted from the data.

14 coding categories were looked at with quantitative analysis. The coding sheet is in Addendum 2. Year, date, title of the article, author, author's position and page number give the basic information about the item. News space is expressed in relation to page size, the smallest unit being one-third of a column.

In 'genre', an element called 'official statement/speech' was added to the traditional newspaper genres. It refers to the statements and speeches made by authorities and printed unchanged, whereas other official materials that had already been journalistically 'packaged' by TASS news agency were coded as news.

Scientific disciplines were divided into four categories: social sciences and humanities, physical sciences, biomedical sciences, and applied sciences and technology. As Bauer *et al.* also admit (2006: 105) this is a difficult part of the analysis since disciplines are often not well definable and may change their boundaries over time. Partly the problem was relieved by introducing the applied sciences category in addition to those three used by Bauer *et al.* The addition was also justified by the emphasis on applied sciences and technology in Soviet science policy. Each category also had several sub-categories whose list was complemented during coding.

'Motivation' aimed to identify the main theme of the article: the event, statement or other impetus which – as interpreted from the text – led to the writing and publication of the article. This provides the overview of what kind of coverage and in what proportions did the newspaper use. Again, in many cases the motivation was not obvious and some general categories (e.g. science community event/statement) were created to accommodate these. Perhaps disputably, space flights were all coded as 'science community events'.

The category 'actors' registered the people who were quoted in the articles. For opinion pieces and speeches the author was coded as the actor. If there was more than one actor, all were coded. In the absence of a more suitable category, cosmonauts were coded as engineers. The 'location' was identified for both the article in general and actors appearing in it.

### 3.2 Qualitative analysis

This study follows the tradition of critical discourse analysis and mainly relies on the ideas of Normal Fairclough (1992) and Teun A. van Dijk (1997).

Discourse analysis is a method that can help to uncover the underlying structures of the text. Discourse is a term originally used in linguistics and referring to the use of language, but the social sciences have added a social dimension to the analysis. It looks at different levels of the text: the structure of sentences, the creation of meaning, the context, and the social practices and beliefs which the text draws upon and which, at the same time, it also constructs, etc. The choices made regarding the use of language, structure of the article and other properties help to reveal the underlying patterns of belief and practices. In this study we have a special interest for social practices, the institutional and organizational circumstances of the discursive events that shape the nature of the discursive practice (Fairclough, 1992: 4).

The articles discussed in this study were selected not only from the sample used for quantitative analysis but from other issues from the same years as well. During coding, test coding and simply reading the issues articles that seemed to be typical for the era and suitable for discourse analysis were photographed. From this collection of around 80 articles 8 articles or groups of articles were selected at a later stage. The focus was on longer articles which both offered a richer material for analysis and were probably more influential for the readers. From both years an example of the space flights coverage was taken. Other articles were chosen to represent the coverage of local and national (i.e. USSR) issues.

Analysis was performed on texts in their original language, Estonian, to avoid the loss or addition of nuances through translation.

## 4. Results

### 4.1 Results of quantitative analysis

This dissertation uses quantitative analysis to give a broad profile of the science items featured in the *Rahva Hääl* newspaper in years 1960 and 1980. This profile is important to understand the general status of science items in the newspaper and points to general trends in the coverage. Special attention will be given to longer articles and articles covering space achievements. A comparison of coverage in 1960 and 1980 will be made.

In total, 92 issues of *Rahva Hääl* were surveyed and 206 science or science-related articles were found. On average, only one out of every four newspaper issue did not have any science articles and the remaining ones

had on average 2.9 articles per issue. While that value was the same for both surveyed years,

**Table 1.** Number of science articles

Year	Number of articles	Number of issues	Issues with science articles	Average per issue with science articles	Average per all issues
1960	110	47	38	2.894737	2.340426
1980	96	45	33	2.909091	2.133333
<b>Total</b>	<b>206</b>	<b>92</b>	<b>71</b>	<b>2.901408</b>	<b>2.23913</b>

there was a drop in science coverage in 1980, meaning less days with science items. The overall drop in the number of articles was not very significant, about 10%: in 1960 the average number of science items over all issues was 2.34, in 1980 it was 2.13. This means one science item approximately per two news pages: a number much higher than reported for Bulgaria in the Bauer *et al.* study (2006) and on par with the one for Britain (although somewhat different criteria in sampling science news may make the result incomparable).

In 1960 the coverage of Soviet space program led to two conspicuous peaks in the data (11 articles on May 17 and 12 items on August 23, plus another 6 the next day) whereas in 1980 no single event had such a massive coverage. The top day in 1980 was October 11 with 10

articles but all of them about different topics and their concentration to this particular issue seems to be a random event.

Almost half (47%) of all the items were very short, meaning no more than two or three paragraphs. Another 45% occupied up to a quarter of a page but usually no more than one column worth of news space. 1980 has a higher proportion of long stories than 1960.

35% of stories were published on the front page; second and third page had equally about a quarter of stories. While in 1960 the front page stories dominated, the science coverage had mainly moved to page three by 1980. While in 1960 space articles made up half of the front page stories, by 1980 it was over 70%.

**Table 2.** Position in paper

Page	1960	1980	Total	%
1	43	29	72	35%
2	28	26	54	26%
3	15	35	50	24%
4	23	6	29	14%
5	1	0	1	0%
			206	

64% of the science items can be classified as news, followed by opinion pieces and features (14 and 11% respectively). When comparing 1960 and 1980, we see a drop in number of opinion pieces and a rise in official statements, both of which can clearly be attributed to the changed coverage of space issues.

The science items deal almost exclusively with Soviet Union; even other socialist countries are rarely mentioned. While local (i.e. Soviet Estonian) stories are in 1960 on the par with the coverage from the rest of Soviet Union, by 1980 articles from the rest of Soviet Union are twice as common as articles from Soviet Estonia, reflecting the political trend of centralization.

This is also evident in the statistics of authors. In 1980 there are almost three times less Estonian authors than in 1960. Press agencies, i.e. official news sources have become much more prominent, with TASS alone comprising almost half of all by-lined items. In 1960 it was a third.

**Table 3. Authors**

	1960	1980	Total	%
<b>TASS or its correspondent</b>	32	44	<b>76</b>	37%
<b>ETA (Estonian News Agency)</b>	2	7	<b>9</b>	4%
<b>APN</b>	0	8	<b>8</b>	4%
<b>Soviet author</b>	9	6	<b>15</b>	7%
<b>Estonian author</b>	47	17	<b>64</b>	31%
<b>Other/unclear</b>	2	2	<b>4</b>	2%
<b>Not by-lined</b>	18	12	<b>30</b>	15%

**206**

A similar pattern – a shifting focus from local to Soviet affairs – can be seen in terms of actors, i.e. people who speak in the articles. While overall Soviet sources feature only little more than Estonian ones (39% over 32%), there is a big difference between two surveyed years. In 1960 Estonian actors were most prominent, representing 40 % of the total number of actors. In 1980, the number of Estonian actors had halved and the number of Soviet actors doubled. Also actors from rest of the worlds are less prominent in 1980. There is a similar tendency with space stories but they account for about half of the change, indicating this was a general trend.

**Table 4. Locations**

Location of article	1960	1980	Total	%	Location of actor	1960	1980	Total	%
<b>Estonia</b>	48	27	<b>75</b>	36%	<b>Estonia</b>	36	16	<b>52</b>	32%
<b>USSR</b>	52	64	<b>116</b>	56%	<b>USSR</b>	21	43	<b>64</b>	39%
<b>Other socialist</b>	4	0	<b>4</b>	2%	<b>Other socialist</b>	12	7	<b>19</b>	12%
<b>West</b>	4	7	<b>11</b>	5%	<b>West</b>	13	8	<b>21</b>	13%
<b>Other</b>	2	2	<b>4</b>	2%	<b>Other</b>	7	1	<b>8</b>	5%

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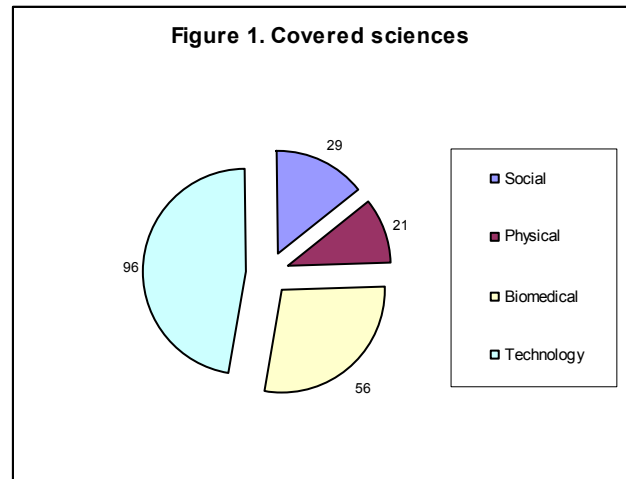
**164**

75% of non-Soviet actors are associated with space articles.

Half of the all actors were scientists. Most of the other actors were present in space articles: for instance in 1960 it was common to have foreign newspapers or Soviet members of the public comment on the achievements. The space coverage is also responsible for the rise in engineers as actors in 1980, for cosmonauts were coded as engineers. In 1960 all the flights

were unmanned and the main voice was the one of scientists. By 1980 the scientific role of the space flights had largely diminished, very few scientists but mainly cosmonauts and state officials were speaking. The changed nature of the Soviet space program will be discussed in more detail in the next chapter.

Technology and applied sciences is the most common covered area, comprising almost half of all articles that could be defined by area of science. However, two thirds of those are space articles. Discounting them, biomedical sciences would come to the top with 28% (although some of those were also published in connection to the space program). Physical sciences are surprisingly little covered with a mere 10%, most of it being earth sciences (e.g. geology, physical geography), with very little physics. Although physics becomes more prominent in 1980 (making top 5 of longer articles), in overall numbers it is still represented fairly lowly. This is a puzzling phenomenon which might be partly caused by the small sample of the study. Whether this is the case or there is some other reason for the low coverage of physics definitely deserves attention and further research.



**Table 5. Most covered sciences**

Top sciences in 1960		
	Discipline	Number of articles
1.	Space technology	30
2.	Medicine	14
3.	Earth sciences	8
4.	Agriculture	8
Top sciences in 1980		
1.	Space technology	31
2.	Agriculture	8
3.	Environment	8
4.	Medicine	7
5.	Archaeology	6

Space articles accounted for 30% of all items, in total 61 articles. It was followed by medicine, agriculture, earth sciences and environment. When looking at longer articles which

are perhaps a better indication of what was in focus, we also see computer science and energy industry becoming more prominent. However, the number of articles is mostly too small to draw any meaningful conclusions. Comparing the years, we see a fall in medical coverage: the high coverage in 1960 was in connection with space flights. There was also a decline in communication (e.g. radio) technology articles and a rise in computer sciences and environment, all of which were not unexpected due to trends in the development of science and society. More interestingly, archaeology coverage increased threefold (from 2 to 6) although the fact that the accrued articles were all very short items may indicate this to be an artefact not a genuine trend.

Looking at what initiated the articles, we see a fundamental difference with the modern science reporting. Whereas nowadays reports or peer-reviewed articles are a major news source, in Soviet journalism very little stories were based on publications. New discoveries and other innovations can be described as the motivation in 12% of the stories; another 6% were dealing with research in progress. The most popular reason for publication was what can vaguely be summarized as a science community event or statement (the launch of a space rocket is a dominant, although not the

**Table 6.** Motivation for publication

	<b>1960</b>	<b>1980</b>	<b>Total</b>	<b>%</b>
Unexpected event	1	0	<b>1</b>	0%
Publication	4	2	<b>6</b>	3%
New discovery, product	11	14	<b>25</b>	12%
A problem	0	1	<b>1</b>	0%
Achievement, award	0	5	<b>5</b>	2%
Anniversary	2	8	<b>10</b>	5%
International co-operation	5	1	<b>6</b>	3%
State/party event/statement	3	14	<b>17</b>	8%
Industry event/statement	1	0	<b>1</b>	0%
Science community event/statement	18	27	<b>45</b>	22%
Other planned events/statements	3	4	<b>7</b>	3%
Reaction to an event/statement	23	4	<b>27</b>	13%
No clear motivation	10	9	<b>19</b>	9%
Research in progress	9	4	<b>13</b>	6%
Conference	20	7	<b>27</b>	13%

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best example). A conference was a separate category, representing 13% of the articles. It was not rare (9% of cases) not to find any indication whatsoever why the article was published.

However, a different picture emerges when we look at longer items only. We see that conferences and new discoveries seem to be mostly the subject of short pieces, making party events/statements more prominent in longer ones (one in ten).

Comparing 1960 and 1980 shows a trend towards institutionalization – there is a significant rise in party statements and articles about anniversaries and awards. The high number of reactions to an event or statement in 1960 is again a characteristic feature of space coverage, as is the rise in science community events in 1980.

As we have seen, space articles form a large and distinct group within all science items. They are also the most visible, with 74% of them published on the front page. Space items are covered much more diversely than the rest of science news: they are accompanied by opinion pieces, they introduce foreign voices and actors beyond the scientific community. They tip the total numbers in favour of Soviet locations and actors; in the remaining articles Soviet Estonian topics and actors were represented more than the ones from the rest of Soviet Union.

The changes between 1960 and 1980 are most often due to the change in space coverage, many of which have been outlined in this chapter. Beyond that, the one real emerging trend is of centralization: we see more articles coming from news agencies, more official voices speaking in the stories, less local voices, and less articles dealing with local matters.

## 4.2 Results of qualitative analysis

This part of the analysis is based on following articles:

From 1960:

- The front page of the August 23 issue (11 items) and page 3 press review article “Nõukogude teaduse ja tehnika silmapaistev saavutus” (The Spectacular Achievement of Soviet Science and Technology);
- “Teadlastelt tulevikule” (From Scientists for the Future) by B. Viiding, December 24 issue, page 2;
- “Inimese mõistusega, masina kiirusega” (With the Mind of a Human, with the Speed of a Machine), after N. Kobrinski ja V. Tekelis, July 7 issue, page 2;
- Photo by G. Lossi, June 19 issue, page 2;

From 1980:

- Front page articles “Orbiidil on piloteeritav kompleks” (The Pilotable Complex is on Orbit) and “Taas teadusesadamasse” (Again to the Haven of Science) from the April 11 issue;
- “Molekulide saladusi selgitades” (Explaining the Secrets of Molecules) by V. Hodossovski (TASS correspondent), May 13 issue, page 3;
- “Teadus ja praktika käsikäes” (Science and Practice Hand in Hand) by A. Paal, July 9 issue, page 3;
- “Teaduselt tootmisele” (From Science to Production), anonymous, December 17 issue, page 2.

### 4.2.1 Space coverage

The 1960s peak in the post-war science coverage can in large part be attributed to the achievements on the space frontier. During the first part of the race, Soviet Union was the leading force, launching the first satellite in 1957 and sending the first man in space in 1961. The great space moment of 1960 was in August when Soviet Union launched a satellite with two dogs on board and returned them safely to Earth. The coverage of this event will be the focus of the next part of the analysis.

The front page of the August 23, 1960 *Rahva Hääl* issue demonstrates the whole arsenal of Soviet propaganda methods. Except for a tiny item on the bottom of the page (dedicated to the anniversary of the 'liberation' of Romania) the whole page is dedicated to the achievement under the banner "The triumph of the science, technology and industry of our country" (literally: homeland, but in English this term has different connotations).

On the most prominent place on the page, that is in the top left corner is the message from the Party Central Committee and the Council of Ministers. Underneath is the TASS report about the flight. On the right hand side is a reportage about the dogs, the rest of the page is filled with commentaries from various people. The coverage is completed with a press review on page three, summarizing newspaper headlines and editorials from various other countries.

The prevailing tone is laudatory, the event is described as a 'triumph' and 'a heroic act' that opens "a new epoch in conquering of the space". The scale of the achievement is magnified by adjectives: the satellite was 'huge' and 'gigantic', the accuracy of the landing was 'extraordinary' and 'fantastic', the problems needed to be solved were 'very complex' and the

work of Soviet scientists and engineers was ‘remarkable’ and ‘brilliant’. The frequent use of such judgemental adjectives is a characteristic feature of Soviet journalism and clearly serves the purpose of constructing the wanted meaning. These adjective are meant to make the meaning of the text unambiguous, prescribe how to think and to give the control over the interaction to the producer of the text. The reader is just expected to accept it.

Despite the large number of articles, there is little variation in framing of the event. The same facts, interpretations and evaluations are repeated from one article to another, often also with a similar linguistic structure. The recurring themes are:

- praise to Soviet scientists, “*The event is a vivid example of the excellent co-operation of Soviet scientists – engineers, technicians, doctors etc – in the rapid development of the space conquest technology*” (I. Sibul);
- praise to socialism, “*The new brilliant feat of our science should give many people of the world the impulse to bethink, the lifestyle and way of thinking of which society creates the best possibilities for the progress of the civilization*” (G. Naan);
- global exaltation, “*Mankind applauds the new victory of Soviet space conquerors*” (press review);
- human space flight as the next step, “*That moment it became clear that the time is not far when man flies to the space and returns. There is no doubt that this first space traveller is a citizen of the Soviet Union*” (O. Kuul);
- the peaceful nature of the mission, “*The work of Soviet scientists and engineers in building the rockets and planes has humane aims. Other goals are sought in the USA where they try to create spy satellites*” (L. Narets).

We are given the impression of an all-embracing nature of the event through the introduction of a multitude of voices. 16 people are commenting on the achievement, plus a summary of the press coverage from nine countries. The people include scientists but also representatives from other fields of life that had authority in the Soviet society – there are factory workers, party officials, pilots, a writer and an architect, pensioners. The countries include not only close allies like Bulgaria or China but also the main Western nations like USA, Germany and UK. However, especially in case of the Western papers the review is just quoting TASS's release summarized in these papers. When quoting those papers it is simply repeating the facts. But the accompanying text shows signs of manipulation. For example:

#### **Outstanding victory of Soviet scientists**

BONN, 21. 8. (TASS). The Soviet scientists succeeded for the first time in history to return living beings from space to Earth, and their new outstanding achievement is in the focus of West German Sunday papers. /.../

The title is it is in a typical Soviet style and therefore likely to have been written by TASS. The same is true for the insertion of the word 'outstanding' in the first sentence. Nothing in the following text supports these phrases yet it is not hard to see effect it had created, turning a possibly neutral coverage into a seemingly positive one.

Another method used is the attribution of consequences to the achievement which do not logically derive from the event itself. Already mentioned was the claim that this technological feat demonstrates the 'undeniable supremacy' of the socialist way of life and will convince many people in the world of it. But the space feat is made to look inspirational for many fields: "*Every scientist has an ardent will to perpetuate great things*" (Mahmut Ismailov) and

*“The example of the spaceship builders inspires us, the workers of the gasoline apparatus to further improve our production technology”* (H. Israel).

The vocabulary used to describe the feat is one of a discourse of conflict. The achievement is often referred to as 'victory'. As a result space will be 'conquered'. The most evident hint to the global confrontation is, ironically, the emphasis on peaceful aims of the mission. The 'peaceful' nature of the Soviet Union is confronted with USA, an 'aggressor' who seeks to deploy space for military purposes. And despite the peace rhetoric, veiled threats are made: *“The possession of these rockets allows us to work in peace and build communism. The warmongers dare not disturb our build-up work”* (Kristjan Kärber).

The article “Teaduslike uurimiste programm on edukalt täidetud” (The scientific research program is successfully completed) by TASS stands out from the rest of coverage. The article describes the scientific aspects of the mission and is written in a different style. It rather reads like the methods section of a scientific paper. In plain language it meticulously lists the organisms and instruments on board and describes the data transmission and landing procedures, concluding with a scant statement: *“The program of scientific research and measurements has been completed. The retrieved data will be processed and are now under comprehensive examination.”*

The article gives some insights into the technical procedures involved in the mission but no further information about the experiments or their (expected) results. It is written in passive form. The dogs 'were sent' to space, instruments 'were placed' on board, the data 'was transmitted' etc. Scientists or any other humans do not feature in a single sentence. Other articles use a similar discourse. What scientists and engineers do is 'bring fame to their

country', 'turn a new page in science' or 'open the way for humans to the interplanetary space'. But more detailed actions are impersonal or attributed to objects or concepts ('systems', 'data', 'instruments' etc).

Only in the reportage "Nad viibisid kosmoses..." (They were in space...) we see a scientist being an active participant of the mission. Yet the active mode is present only in the quotes ('we did'), the remaining text still prefers passive mode. The reportage - which towards the end turns into a rather loosely structured interview – touches upon the scientific aspects of the mission but does not elaborate and turns the focus on all aspects related to the dogs (what breed are they, what they eat etc).

The scientist in the reportage remains anonymous, he is just referred to as 'a researcher from the National Academy of Sciences'. No attempt is made to explain this anonymity, it is made to look natural. The mention of the Academy of Sciences in this article is the only hint in the whole coverage to the identities of the scientists behind the mission. Everywhere only abstract 'Soviet scientists and engineers' are mentioned. This is easily explained by the top secret nature of the space program but provides us another ironic example of how rhetoric and reality cleft in the Soviet Union. Commenting on the feat, the writer Kamil Jansen wrote: *"The names of the creators of this gigantic space ship will be written in the golden book of the socialist state's grandiose achievements."*

By 1980 the nature of the space program had changed. The era of grand achievements was over, Soviet Union was now focusing on its orbital station Saljut and took its pride in 'international co-operation', that is, flying cosmonauts from other socialist countries to space. Although the number of space-related articles in 1980 is equal to 1960, the main bulk of 1980

articles are dry news items reporting on the launch of another rocket or crew. One of the few longer articles, along with a typical 1980 space item, was chosen for the analysis. They come from the April 11 issue of *Rahva Hääl*.

“Orbiidil on piloteeritav kompleks «Saljut 6» - «Sojuz 35» - «Progress 8»” (The pilotable complex of Saljut 6, Sojuz 35, Progress 8 is on orbit) is a standard TASS release. It is again dominated by passive voice apart from a few sentences describing the actions of newly arrived cosmonauts. Instead of the concise scientific language of the 1960 TASS article, the style is rather bureaucratic. An typical example from the middle of the article: *“The long and active use of the orbital station Saljut 6 has been made possible by the constructional and technical solutions used in designing it, and also by the complex of renovation and preventive maintenance works performed by cosmonauts during flights.”* This sentence, like many others, carries little useful or relevant information. Instead it delivers assurances that everything is under control, work progresses as planned, there is nothing to worry about.

The following reportage of the last days of cosmonauts before the launch from the Baikonur cosmodrome is titled “Taas teadusesadamasse” (Again to the Haven of Science). The label ‘haven of science’ is again used in the content but without any supporting claims. No science is discussed in the article, a superficial list of research subjects was presented in TASS’s article. This use of words can be interpreted as an attempt to frame the space missions in a scientific discourse. This we already saw in 1960: the claim is that Soviet space activities are only for scientific, i.e. peaceful purposes.

The space flights are framed as still something special and the discourse of a promising future is used. The author asks: “When will man get used to space flights and starts taking them to be as ordinary as plane flights?”

“The feeling that has been felt by a few dozen cosmonauts before us,” [the mission commander] Leonid Popov said,” seems to me, will never disappear. Now we are only flying to Earth orbit. But a time will come, when rockets launch for planets. Is it possible to get used to this?”

A thread we will see running through all articles is the construction of a 'Soviet citizen'. The representation of people in the media was also closely controlled: the people had to serve as role models. None more so than cosmonauts.

The modest working class background of the mission commander Leonid Popov is mentioned. Their skills are praised but cosmonauts themselves remain modest. The article mentions that during training they had to solve crisis situations.

As experienced snipers they scored a hundred out of a hundred.

“This is all Leonid’s merit,” [the other cosmonaut] Ryumin says. “He’s extremely concentrated and as a master of his field will find quickly the one and only right solution.”

“This all shows that Valeri’s experience has already on land become our shared experience,” Popov added smilingly.

In a way, we can see the same construction work in the earlier reportage about the space dogs. The animals are being anthropomorphised and so made role models:

“They tolerate even this unusual treatment completely silently,” the scientist said. At the same time the dogs looked at people in the room friendly and even happily. The scientist explained: “The animals think that another experiment will begin. And they are used to working properly.”

#### **4.2.2 General science coverage**

The remaining part of the analysis will look at a selection of longer science articles representing both local (Estonian) and national (Soviet Union) topics. The articles also vary in style.

No different from the feature articles about cosmonauts, those about scientists also engage in constructing the image of a 'Soviet citizen'. The main characteristics attributed to people through linguistic tools were:

- modesty, usually followed or preceded by the journalist's emphasis on the value of the achievement: *“Of course we have found out a few things /.../ but on no circumstances should these findings be made into a big thing and proclaimed that something don't know what has been done,” [Harri Nurkse said]. Yet a big work has been done and big things are being made now. (Teaduselt tulevikule); “There is quite little to be done [by us], just read the signal,” professor N. Borisevich smiled. As we now know, this 'quite little' /.../ has founded a new direction in electrospectroscopy. (Molekulide...);*

- diligence; the photos accompanying the articles are usually of people concentrating on their work, the reportage “Teadlastelt tulevikule” opens with a scene of a girl washing a flask and contains several more descriptions of people working. Work is also portrayed as a priority: *“Our conversation was interrupted by a sudden cue from the recorder of one of the instruments. The time for another experiment had arrived. Research continues.”* (Molekulide...);
- dedication, *“Just as formaldehyde resins for Harri Nurkse, so has gasoline become the purport of life for senior researcher Ülo Lille”* (Teadlastelt tulevikule);
- youth, *“The young engineer comrade R. Põvat makes preparations for research in the field of industrial gas burners”* (photo caption, July 19, 1960). The youth of people is mentioned also in “Teadlastelt tulevikule”, often balanced with assurance that despite that they are already very experienced. The emphasis on youth in 1960 has an ideological dimension – the young people were not connected to the ‘bourgeois’ state of the previous era (Estonia was independent 1918-40) but are completely ‘Soviet’.

The articles give no clear indication of their news value, except for “Molekulide saladusi otsimas” which introduces research honoured with the Lenin Prize. The most puzzling in that respect is the photo mentioned in the previous paragraph about emphasizing youth. It shows a man with glasses and a working coat opening the door of a device. It does not seem to be the artistic quality of the photo that justifies its publishing. The caption states that the man ‘makes preparations for research’. No



**Figure 2.** Photo from June 19, 1960 issue of Rahva Hääl

article is attached to the photo, it stands alone.

In fact, similar photos were a common genre in 1960, all similarly showing people at work. On one hand these photos again construct the image of a Soviet citizen, on the other hand they reveal a practice of Soviet media which is also evident in many articles. It is the practice of communicating the matter of fact that an action is being done, but not elaborating what exactly or how, as these were not important. These texts are not meant to provide us with new information but to give us assurances that people are working, or in a wider sense that everything is normal.

The discourse most used in case of science is the materialist discourse. The measure of science is either how much money it can save through innovations or how many new products it will provide for us.

The years of the tenth five-year period are characterized by the accelerating pace of the scientific-technological progress in the national economy, to which Soviet science has greatly contributed. Alone the exploitation to production of the research results of Ukrainian scientists made it possible to achieve economic effect over a billion roubles in the first four years of the five-year period. (Teaduselt tootmisele)

And already in the near future... thousands of tons of synthetic fibres will be produced from oil shale, replacing lamb wool or silk and making suits that never need ironing; thousands of tons of nylon and caprone that replace natural materials and materials not only for commodities but also for production of exceptionally durable machine parts; hundreds of thousands of tons of nitrogen fertilizers that enable to manifold the grain

production of Baltic republics. /.../ Through the test tube of the scientist these bright perspectives will open and be accomplished, a great future to where the lighthouse of Soviet science will show the way will be accomplished. (Teadlastelt tulevikule)

Other articles are less explicit in making such promises but still frame the benefits of science in the context of material well being, even if the link is not obvious.

For us, automation cannot be the enemy of the workers if it reduces the workload of humans and at the same time increases their income and material as well as cultural well being. (Inimese...)

However, the articles are vague regarding timeframes. We are told to expect things happening in the 'near future' or just 'envisage' a time when science has transformed the way we live. The symptomatic lack of details is also evident here, in the discourse of future.

As mentioned before, the texts present science as a producer of new goods. That this is seen as the primary function of science is proven by the – perhaps even apologetic – manner in which fundamental sciences are discussed. It seems crucial to mention the application of science for the benefit of the society (summarized in the concept of 'practice').

“Fundamental studies give always a lot for practice,” N. Borissevich said. “This is one of the peculiarities of modern science.” (Molekulide...)

The deeper understanding of the genetic, physiological and biochemical mechanisms of a living organism show us the way to guiding life processes. Hence arise the important connections of biology and practice. (Teadus ja praktika käsikäes)

These recurring references to practice illustrate the intertextual aspects of Soviet media texts. The articles tend to bear some echo of the guidelines laid out by the party, in this case the requirement of a strong connection between science and industry. It is fair to presume that without similar references the article would have been rejected by the editors and censors. In the end, this intertextuality serves the purpose of cementing the discourse constructed by the party and thereby reinforcing its power. From time to time, the guiding principle were reminded in some article like “Teaduselt tootmisele” (From Science to Production), published anonymously – which in Soviet media meant it originated from the highest authorities.

The Party sets the goal of bringing our economy on the path of intensive development. This will further increase the importance of science in society. /.../ In the future the effectiveness of scientific research must be enhanced and the deadlines for the exploitation of innovations in the production must be shortened. For this the connection of fundamental and applied research with the requirements of all branches of the national economy needs to be strengthened and the scientific potential of higher education establishments used better.

Occasionally science articles offered a chance to fight the great ideological battle of capitalism vs. socialism. The article “Inimese mõistusega, masina kiirusega” (With the Mind of a Human, with the Speed of a Machine) starts as an introduction to the new science of cybernetics before launching an attack against capitalism. It states that 'not everybody is able

to judge correctly the role of cybernetics among other disciplines' and criticizes 'capitalist ideologists' for misinterpreting the nature and role of cybernetics. Naturally, Soviet science represents the 'correct' interpretation. Demagogy is also evident in the following extract where the same process is framed in two different ways. There is a linguistic difference in describing the loss of workplaces (dislodging vs. freeing people). Also, suggesting that Soviet people 'head' to other jobs implies that they had some freedom that Western people did not have, whereas in reality probably the opposite was the case.

It is clear that the destiny of automation will be different in the socialist countries than in capitalist countries. In the West, automation means unemployment, hunger and misery. /.../ [In USA] in the next ten years we can annually expect the dislodgement of 3.5 million people from the industry as a result of automation. /.../ In the Soviet Union also millions of people will be freed as a result of automation. But these people will not be unemployed; they just head to work in different domains. (Inimese...)

Another discourse emerging from the articles is science as a tool for mastering nature, similar to the 'conquering space' theme encountered earlier. For example, one already quoted article ("Teadus ja praktika käsikäes") talks about the 'guiding' of life processes when discussing genetics and other biological techniques. Another, in the field of physics, uses the word 'steer':

To find out all the finesses about intermolecular mechanics and energetics means to learn to purposefully steer the state of these 'bricks' of the Universe, in the interest of various branches of science and technology. (Molekulide...)

But above all, science is seen as a problem solver. Mentioning that many problems have been solved or still need solving is a recurring theme in the articles, both in space items and other texts. This is both shown as the way science naturally operates as well as its ideological role in the task of communism-building: to 'analyze the current problems of the mature socialist society' and solve them (Teaduselt toomisele).

Finally, the titles of the articles are also characteristic. Three of them are variations on the same theme: From Scientists for the Future ("Teadlastelt tulevikule"), Science and Practice Hand in Hand ("Teadus ja praktika käsikäes"), From Science to Production ("Teaduselt tootmisele"). They are characterized by brevity but also by vagueness. It is impossible to know from the titles that the first article is about chemical engineering and the second about genetics. The titles do not summarize the specific content of the article but the overarching message, implying once more that the goal of Soviet media was not to give information but reinforce discourses.

## 5. Discussion

One can think of two reasons why the science reporting of the socialist countries has been very little studied. First, the science communication movement started only in late 1980s when the Soviet empire was about to collapse. The end of the Cold War also meant Soviet media lost relevance as a research subject. Secondly, science has probably not been so prominent in the media of the former socialist countries, hence having less public relevance and being a less attractive subject of study. If science communication is researched, priority will likely be given to current situation or the important and interesting years of transformation. However, as this study has shown, the analysis of science coverage of the Soviet period can be a window both to the science policy of the time and the practices of Soviet media.

This study has provided us with the quantitative structure of science coverage and the overview of major discourses used in science texts which can serve as a platform for further, more detailed research.

The quantitative analysis has shown that, on average, the surveyed newspapers carried two science items per issue. In comparison with other available data (Bauer et al, 2006) this can be considered a high representation. However, most articles are short and uninformative. There is a strong domestic focus: events outside Soviet Union are very rarely covered. The articles often lack a well-defined event which could be defined as the motivation for publication; articles about discoveries and new scientific results constitute a minority. The study, although small-scaled, also reflects well on the changes in science coverage. Comparing 1960 and 1980 we see a clear pattern of centralization and institutionalization.

Articles on space exploration form a distinct part of the coverage, with their own characteristic features. When looking at science coverage with quantitative methods one needs to be aware of the possible impact of this on the data. For instance, space articles are much more often on the front page, they lead to peaks in coverage, and space news is more often accompanied with articles from different genres. All this needs to be factored in when data is used to discuss science coverage in general.

The qualitative analysis reveals some fundamental characteristics of the Soviet media. For instance, the almost ritual repetitiveness of not only words and phrases but also topics and frames. This is a method of creating coherence of the message to ensure its maximum impact. For the same purpose the illusion of a multitude of voices is often created which is especially evident in the 1960 space stories. The texts are also intertextual with all links leading to the Party. There is a totality of the message.

These aspects, of course, are characteristic not only to science texts but to Soviet media in general. In fact, the analyzed science coverage seems to tell us more about Soviet science policy and media practices than about science. Science seems to be just another tool – or voice – to convey the same messages and discourses that can also be found elsewhere. It is used as the ideological battlefield, for constructing a Soviet citizen, for assertions of a better future. It is the outlet, not the subject, which guides the practices of coverage. While science as a subject might not have been on the highest level of political control and ideological canonization, it was not possible to cover it less ideologically in *Rahva Hää*.

Science is contributing to this promised better future with new products. Its importance is hence – and almost solely so – defined through its material contribution to the society. Keen to reflect the party guidelines that science should function in the interest of national economy, the articles make an effort to outline the possible material benefits. The fact that science is essentially portrayed as a problem solver and a tool of mastering the nature, not, for example, as means to expanding our knowledge for the sake of it, further emphasizes the material discourse.

However, the vagueness of the coverage does not let science to acquire an identity of its own. Science is not questioned (unless, of course, it is the science of capitalist countries). Scientific concepts or details of scientific work are not discussed or explained. Promises are made but not in a binding way. The articles might not be without journalistic merit but the question is: Can it be called science journalism? Do the science articles have unique properties?

Further research is needed to answer these questions, especially relating science articles with the rest of media texts. Only in context we can establish if the position of science is in some respect unique. For example, one can sense the presence of the industry discourse in science texts. Could it be that given the greater prominence of industry and also the much wanted links between science and industry, science was seen as an extension of industry and therefore discourses and practices used in covering industry affairs were simply transferred to science?

The totality of discourses, regardless of the topic, is largely the inevitable result of the status of *Rahva Hää*. As the official paper of the local Communist Party it ranked high in terms of control and canonization. The lower levels of media such as local papers or specialized outlets (e.g. the popular science magazine *Horisont* that was founded in 1967) enjoyed more freedom

and might provide a richer, a more revealing, and a more intimate portrayal of science. However, they are also more likely to be shaped by local, i.e. Estonian, cultural background. They could not be used for the attempt to characterize Soviet science coverage in general as we feel safe to do with *Rahva Hääl*.

Finally, there is the question of media influence. This is notoriously difficult to measure or analyse and even more so for past periods and for the country where sociological studies were hardly conducted. It remains to be discussed which impact the discourses of science might have had on the audience that had become apt in reading between the lines.

## Summary

This study has been exploring the characteristics of science coverage in the Soviet Estonian newspaper *Rahva Hääl*. It was especially interested how the ideological control exerted on both science and the media manifests itself in the science articles.

In a socialist society, the media was an important instrument of social construction, ‘a collective organizer’. *Rahva Hääl* was the official newspaper of the local Communist Party and hence ranked high in the hierarchy of political control and ideological canonization. On the political level, science was seen as important driver of progress. The need for a strong connection between science and production was constantly emphasized.

These aspects become evident also in the few previous studies looking at science coverage in a socialist media. A recent study by Bauer *et al.* (2006) comparing the science coverage in Bulgaria and Great Britain concluded that the science coverage in Bulgarian media depended on the current policies of the ruling Communist Party. The news items were overwhelmingly positive and laudatory. Science was presented as an unquestioned benefactor of the society. The trends in the intensity of coverage were found to follow similar patterns both in Bulgaria and UK. The underlying ideological message was also seen by Kirpal & Ilsmann (2004) who analyzed science programs in the 1970s DDR. Most contributions included political statements. The goal of the programs was education, not entertainment, the authors conclude.

This study looked at the science coverage of *Rahva Hääl* in 1960 and 1980, combining quantitative and qualitative analysis. Quantitative content analysis gave us the basic parameters of science coverage. There is on average one science item per two news pages but

they tend to be short. The articles almost exclusively deal with Soviet topics, outside voices are very rare. Technology is the most prominent area of science, mostly due to extensive coverage of space exploration. The articles often lack a well-defined news motivation. A clear trend towards centralization and institutionalization can be seen when comparing 1960 and 1980.

Space coverage forms a special part of the coverage with its own distinct characteristics. Especially the achievements of 1960 are used to celebrate the Soviet system in general. The articles actively engage in ideological construction; language is used to prescribe the meanings of events; a multitude of voices is constructed to create coherence of the message. Other science articles also engage in constructing the image of a model Soviet citizen: modest, diligent, dedicated and young.

The primary role of the science is seen to be the creation of new products. However, rather than writing articles about actual results, the items tend to portray work in progress. Science is not explained in the articles.

Due to the high level of control and canonization of *Rahva Hääl*, many characteristics of the science coverage are not unique to science stories but characterize all articles regardless of their topic. The used discourses strongly reflect the guiding principle of Soviet media and science as formulated by the party.

This study has only roughly mapped the characteristics of Soviet science coverage. Further, more detailed research is needed and this study has identified many new questions.

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## Addendum 1. Selected issues for quantitative analysis

Number of week	Date in 1960	Date in 1980	Weekday
2	15.01	18.01	Fri
2	16.01	19.01	Sat
4	26.01	29.01	Tue
6	13.02	16.02	Sat
7	18.02	21.02	Thu
7	17.02	20.02	Wed
9	4.03	7.03	Fri
9	6.03	9.03	Sun
10	13.03	16.03	Sun
11	20.03	23.03	Sun
13	30.03	2.04	Wed
15	14.04	17.04	Thu
16	21.04	24.04	Thu
18	3.05	6.05	Tue
20	17.05	20.05	Tue
22	5.06	8.06	Sun
22	3.06	6.06	Fri
23	10.06	13.06	Fri
23	8.06	11.06	Wed
24	19.06	22.06	Sun
25	24.06	27.06	Fri
25	22.06	25.06	Wed
26	2.07	5.07	Sat
27	7.07	10.07	Thu
28	12.07	15.07	Tue
28	14.07	17.07	Thu
28	17.07	20.07	Sun
29	19.07	22.07	Tue
29	23.07	26.07	Sat
32	12.08	15.08	Fri
33	20.08	23.08	Sat
33	16.08	19.08	Tue
34	24.08	27.08	Wed
34	23.08	26.08	Tue
35	1.09	4.09	Thu
35	31.08	3.09	Wed
39	27.09	30.09	Tue
39	1.10	4.10	Sat
40	8.10	11.10	Sat
43	27.10	30.10	Thu
44	6.11	9.11	Sun
45	11.11	14.11	Fri
47	27.11	30.11	Sun
48	3.12	6.12	Sat
50	14.12	17.12	Wed
50	15.12	18.12	Thu
51	21.12	24.12	Wed
51	23.12	26.12	Fri

 No issue published

## Addendum 2. Coding Sheet

1. Year
  1. 1960
  2. 1980
2. Date .....
3. Title of article .....
4. Page .....
5. News space
  1. up to 1/7 page (one column)
  2. up to 1/4
  3. up to 1/2
  4. up to 1 page
  5. more than 1 page
  6. up to 1/21 of the page (1/3 of a column)
6. Photograph(s)
  1. Yes
  2. No
7. Author .....
8. Author's position (if given) .....
9. Genre
  1. Official statement/speech
  2. News
  3. Opinion, comment
  4. Interview
  5. Article, reportage, feature
  6. Other .....
10. Location
  1. Estonia
  2. Elsewhere in USSR
  3. Other Socialist country
  4. Western World
  5. Other/unspecified
11. Science
  1. Social, humanities
    - i. Archeology
    - ii. Economics
    - iii. Ethnology
    - iv. History, history of science
    - v. Linguistics
    - vi. Pedagogics
    - vii. Philosophy
    - viii. Political science, ideology
    - ix. Psychology
    - x. Sociology
    - xi. Arts
  2. Physical
    - i. Astronomy/astrophysics

- ii. Chemistry
- iii. Earth sciences
- iv. Mathematics
- v. Physics
- 3. Biomedical
  - i. Agriculture
  - ii. Biology
  - iii. Environment/Ecology
  - iv. Genetics
  - v. Medicine
  - vi. Veterinary
- 4. Technology/Engineering
  - i. Clothing, accessories, handicraft
  - ii. Computing/cybernetics
  - iii. Construction
  - iv. Electronics
  - v. Energetics
  - vi. Home appliances
  - vii. Metallurgy
  - viii. Military technology
  - ix. Mining
  - x. Radio technology, communication
  - xi. Space, aviation
  - xii. Transport
  - xiii. Mechanical engineering

12. Motivation for publication

- 1. Unexpected event
- 2. Publication (scientific study, report, analysis or book)
- 3. New discovery, product, innovation
- 4. A problem
- 5. Achievement, award
- 6. Anniversary
- 7. International co-operation
- 8. State/party event/statement
- 9. Industry event/statement
- 10. Science community event/statement
- 11. Other planned events/statements
- 12. Reaction to an event/statement
- 13. No clear motivation
- 14. Research in progress
- 15. Conference

13. Actors

- 1. Scientist
- 2. Engineer
- 3. State/party official
- 4. Journalist/publication
- 5. Worker
- 6. Member of public
- 7. Other .....

14. Origin of actor (if different from location)

1. Estonia
2. Elsewhere in USSR
3. Other Socialist country
4. Western World
5. Other/unspecified

## Addendum 3. Results of quantitative analysis

### General coverage

Number of articles in each issue

1960	Articles	1980	Articles
15.01	0	18.01	0
16.01	1	19.01	3
26.01	1	29.01	0
13.02	4	16.02	2
17.02	1	20.02	1
18.02	0	21.02	6
4.03	1	7.03	1
6.03	1	9.03	
13.03	5	16.03	1
20.03	0	23.03	5
30.03	0	2.04	1
14.04	0	17.04	2
21.04	0	24.04	3
3.05		6.05	3
17.05	11	20.05	1
3.06	3	6.06	4
5.06	1	8.06	3
8.06	2	11.06	4
10.06	2	13.06	6
19.06	1	22.06	1
22.06	1	25.06	0
24.06	0	27.06	1
2.07	2	5.07	0

7.07	1	10.07	2
12.07	1	15.07	2
14.07	0	17.07	0
17.07	1	20.07	0
19.07	1	22.07	0
23.07	0	26.07	3
12.08	2	15.08	3
16.08	2	19.08	0
20.08	1	23.08	0
23.08	12	26.08	1
24.08	6	27.08	3
31.08	5	3.09	2
1.09	3	4.09	2
27.09	3	30.09	5
1.10	1	4.10	2
8.10	3	11.10	10
27.10	5	30.10	7
6.11	2	9.11	
11.11	1	14.11	0
27.11	4	30.11	0
3.12	7	6.12	2
14.12	2	17.12	3
15.12	2	18.12	0
21.12	6	24.12	1
23.12	2	26.12	

110

96

Number of science articles

	Number of articles	Number of issues	Issues with science articles	Average per issue with science articles	Average per all issues
1960	110	47	38	2.894737	2.340426
1980	96	45	33	2.909091	2.133333
	206	92	71	2.901408	2.23913

Position in paper

Page	1960	1980	Total	%
1	43	29	72	35%
2	28	26	54	26%
3	15	35	50	24%
4	23	6	29	14%
5	1	0	1	0%

206

### News space

	1960	1980	Total	%
1/21	53	43	96	47%
1/7	38	23	61	30%
1/4	13	17	30	15%
1/2	6	12	18	9%
1	0	1	1	0%
1+	0	0	0	0%

206

### Photographs

	1960	1980	Total	%
Yes	20	19	39	19%
No	90	77	167	81%

206

### Genre

	1960	1980	Total	%
Official statement/speech	3	7	10	5%
News	69	63	132	64%
Opinion, comment	22	7	29	14%
Interview	3	5	8	4%
Article, reportage, feature	11	12	23	11%
Other	2	6	8	4%

210

### Area of science

	1960	1980	Total	%
Social	11	18	29	14%
Physical	10	11	21	10%
Biomedical	31	25	56	28%
Technology	52	44	96	48%

202

### Scientific disciplines

	1960	1980
1.1	2	6
1.2	0	3
1.3	2	0
1.4	4	2
1.6	2	1
1.7	0	1
1.8	1	2
1.9	0	1
1.10	0	1
1.11	0	1
2.2	0	1
2.3	8	5
2.4	0	1
2.5	1	4
3.1	8	8
3.2	4	2
3.3	4	8
3.5	14	7
3.6	1	0
4.1	2	0
4.2	2	5
4.3	2	1
4.4	0	1
4.5	4	2
4.9	2	1
4.10	4	0
4.11	30	31
4.12	2	2
4.13	3	2

102

99

### Motivation

	1960	1980	Total	%
1	1	0	1	0%
2	4	2	6	3%
3	11	14	25	12%
4	0	1	1	0%
5	0	5	5	2%
6	2	8	10	5%
7	5	1	6	3%
8	3	14	17	8%
9	1	0	1	0%
10	18	27	45	22%
11	3	4	7	3%
12	23	4	27	13%
13	10	9	19	9%
14	9	4	13	6%
15	20	7	27	13%

209

### Location of article

	1960	1980	Total	%
Estonia	48	27	75	36%
USSR	52	64	116	56%
Other socialist	4	0	4	2%
West	4	7	11	5%
Other	2	2	4	2%

210

### Actors

	1960	1980	Total	%
Scientist	45	38	83	51%
Engineer	10	20	30	18%
State/party official	5	14	19	12%
Journalist	13	2	15	9%
Worker	6	1	7	4%
Member of public	9	0	9	5%
Other	1	0	1	1%

89                  75                  164

### Location of actor

	1960	1980	Total	%
Estonia	36	16	52	32%
USSR	21	43	64	39%
Socialist country	12	7	19	12%
West	13	8	21	13%
Other	7	1	8	5%

### Authors

	1960	1980	Total	%
TASS or correspondent	32	44	76	37%
ETA	2	7	9	4%
APN	0	8	8	4%
Soviet	9	6	15	7%
Estonian	47	17	64	31%
Other/unclear	2	2	4	2%
None	18	12	30	15%

110                  96                  206

## Space coverage

Number of science articles	Number of articles	Number of issues	Issues with space articles	Average per issue with space articles	Average per all issues
<b>1960</b>	30	47	7	4.285714	0.638298
<b>1980</b>	27	45	17	1.588235	0.6
	57	92	24		

## Position in paper

Page	1960	1980	Total	%
<b>1</b>	21	21	<b>42</b>	74%
<b>2</b>	3	2	<b>5</b>	9%
<b>3</b>	6	2	<b>8</b>	14%
<b>4</b>	0	2	<b>2</b>	4%

57

## News space

	1960	1980	Total	%
<b>1/21</b>	12	12	<b>24</b>	42%
<b>1/7</b>	11	5	<b>16</b>	28%
<b>1/4</b>	5	5	<b>10</b>	18%
<b>1/2</b>	2	5	<b>7</b>	12%
<b>1</b>	0	0	<b>0</b>	0%
<b>1+</b>	0	0	<b>0</b>	0%

57

## Photographs

	1960	1980	Total	%
<b>Yes</b>	5	7	<b>12</b>	21%
<b>No</b>	25	20	<b>45</b>	79%

57

## Genre

	1960	1980	Total	%
<b>Official statement/speech</b>	1	5	<b>6</b>	10%
<b>News</b>	12	22	<b>34</b>	56%
<b>Opinion, comment</b>	13	0	<b>13</b>	21%
<b>Interview</b>	1	0	<b>1</b>	2%
<b>Article, reportage, feature</b>	3	3	<b>6</b>	10%
<b>Other</b>	0	1	<b>1</b>	2%

61

### Location of article

	1960	1980	Total	%
<b>Estonia</b>	0	1	<b>1</b>	2%
<b>USSR</b>	28	28	<b>56</b>	98%
<b>Other Socialist</b>	1	0	<b>1</b>	2%
<b>West</b>	1	2	<b>3</b>	5%
<b>Other</b>	0	0	<b>0</b>	0%

61

### Motivation

	1960	1980	Total	%
<b>1</b>	0	0	<b>0</b>	0%
<b>2</b>	0	0	<b>0</b>	0%
<b>3</b>	0	0	<b>0</b>	0%
<b>4</b>	0	0	<b>0</b>	0%
<b>5</b>	0	0	<b>0</b>	0%
<b>6</b>	0	1	<b>1</b>	2%
<b>7</b>	0	0	<b>0</b>	0%
<b>8</b>	0	4	<b>4</b>	7%
<b>9</b>	1	0	<b>1</b>	2%
<b>10</b>	10	20	<b>30</b>	49%
<b>11</b>	0	1	<b>1</b>	2%
<b>12</b>	19	4	<b>23</b>	38%
<b>13</b>	0	0	<b>0</b>	0%
<b>14</b>	0	0	<b>0</b>	0%
<b>15</b>	0	1	<b>1</b>	2%

61

### Actor

	1960	1980	Total	%
<b>Scientist</b>	19	4	<b>23</b>	30%
<b>Engineer</b>	2	18	<b>20</b>	26%
<b>State/party official</b>	2	8	<b>10</b>	13%
<b>Journalist</b>	12	0	<b>12</b>	16%
<b>Worker</b>	3	0	<b>3</b>	4%
<b>Member of public</b>	7	0	<b>7</b>	9%
<b>Other</b>	1	0	<b>1</b>	1%

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### Location of actor

	1960	1980	Total	%
<b>Estonia</b>	11	2	<b>13</b>	17%
<b>USSR</b>	8	19	<b>27</b>	36%
<b>Socialist country</b>	10	6	<b>16</b>	21%
<b>West</b>	10	3	<b>13</b>	17%
<b>Other</b>	7	0	<b>7</b>	9%

## Longer articles<sup>3</sup>

### Number of science articles

	Number of articles	Number of issues	Issues with science articles	Average per issue with science articles	Average per all issues
<b>1960</b>	57	47	29	1.965517	1.212766
<b>1980</b>	53	45	26	2.038462	1.177778
	110	92	55		

### Position in paper

Page	1960	1980	Total	%
<b>1</b>	20	12	<b>32</b>	29%
<b>2</b>	15	20	<b>35</b>	32%
<b>3</b>	9	18	<b>27</b>	25%
<b>4</b>	12	3	<b>15</b>	14%
<b>5</b>	1	0	<b>1</b>	1%

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### News space

	1960	1980	Total	%
<b>1/7</b>	38	23	<b>61</b>	55%
<b>1/4</b>	13	17	<b>30</b>	27%
<b>1/2</b>	6	12	<b>18</b>	16%
<b>1</b>	0	1	<b>1</b>	1%
<b>1+</b>	0	0	<b>0</b>	0%

110

### Photographs

	1960	1980	Total	%
<b>Yes</b>	20	19	<b>39</b>	35%
<b>No</b>	37	34	<b>71</b>	65%

110

### Genre

	1960	1980	Total	%
<b>Official statement/speech</b>	3	6	<b>9</b>	8%
<b>News</b>	24	21	<b>45</b>	41%
<b>Opinion, comment</b>	13	6	<b>19</b>	17%
<b>Interview</b>	3	4	<b>7</b>	6%
<b>Article, reportage, feature</b>	11	12	<b>23</b>	21%
<b>Other</b>	1	6	<b>7</b>	6%

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<sup>3</sup> News space categories 1 to 5 on the coding sheet (i.e. excluding category 6: up to 1/21 of the page)

Area of science

	<b>1960</b>	<b>1980</b>	<b>Total</b>	<b>%</b>
<b>Social</b>	6	11	<b>17</b>	15%
<b>Physical</b>	2	7	<b>9</b>	8%
<b>Biomedical</b>	16	12	<b>28</b>	25%
<b>Technology</b>	31	27	<b>58</b>	52%

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Scientific disciplines

	<b>1960</b>	<b>1980</b>
<b>1.1</b>	2	2
<b>1.2</b>	0	2
<b>1.3</b>	0	0
<b>1.4</b>	2	2
<b>1.6</b>	1	1
<b>1.7</b>	0	1
<b>1.8</b>	1	2
<b>1.9</b>	0	0
<b>1.10</b>	0	0
<b>1.11</b>	0	1
<b>2.2</b>	0	1
<b>2.3</b>	2	2
<b>2.4</b>	0	0
<b>2.5</b>	0	4
<b>3.1</b>	4	3
<b>3.2</b>	2	0
<b>3.3</b>	1	5
<b>3.5</b>	9	4
<b>3.6</b>	0	0
<b>4.1</b>	0	0
<b>4.2</b>	2	4
<b>4.3</b>	0	0
<b>4.4</b>	0	0
<b>4.5</b>	3	2
<b>4.9</b>	1	0
<b>4.10</b>	1	0
<b>4.11</b>	18	19
<b>4.12</b>	2	2
<b>4.13</b>	3	1
	<b>54</b>	<b>58</b>

### Motivation

	<b>1960</b>	<b>1980</b>	<b>Total</b>	<b>%</b>
<b>1</b>	1	0	<b>1</b>	1%
<b>2</b>	2	2	<b>4</b>	4%
<b>3</b>	5	2	<b>7</b>	6%
<b>4</b>	0	1	<b>1</b>	1%
<b>5</b>	0	3	<b>3</b>	3%
<b>6</b>	0	8	<b>8</b>	7%
<b>7</b>	2	0	<b>2</b>	2%
<b>8</b>	2	9	<b>11</b>	10%
<b>9</b>	1	0	<b>1</b>	1%
<b>10</b>	10	12	<b>22</b>	19%
<b>11</b>	3	2	<b>5</b>	4%
<b>12</b>	15	4	<b>19</b>	17%
<b>13</b>	10	8	<b>18</b>	16%
<b>14</b>	4	3	<b>7</b>	6%
<b>15</b>	2	3	<b>5</b>	4%

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### Location of article

	<b>1960</b>	<b>1980</b>	<b>Total</b>	<b>%</b>
<b>Estonia</b>	25	16	<b>41</b>	37%
<b>USSR</b>	28	36	<b>64</b>	58%
<b>Other Socialist</b>	2	0	<b>2</b>	2%
<b>West</b>	1	0	<b>1</b>	1%
<b>Other</b>	1	2	<b>3</b>	3%

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### Actor

	<b>1960</b>	<b>1980</b>	<b>Total</b>	<b>%</b>
<b>Scientist</b>	35	32	<b>67</b>	49%
<b>Engineer</b>	9	19	<b>28</b>	21%
<b>State/party official</b>	5	11	<b>16</b>	12%
<b>Journalist</b>	12	1	<b>13</b>	10%
<b>Worker</b>	6	1	<b>7</b>	5%
<b>Member of public</b>	4	0	<b>4</b>	3%
<b>Other</b>	1	0	<b>1</b>	1%
	<b>72</b>	<b>64</b>	<b>136</b>	

### Location of actor

	<b>1960</b>	<b>1980</b>	<b>Total</b>	<b>%</b>
<b>Estonia</b>	33	15	<b>48</b>	35%
<b>USSR</b>	12	35	<b>47</b>	35%
<b>Socialist country</b>	12	7	<b>19</b>	14%
<b>West</b>	12	6	<b>18</b>	13%
<b>Other</b>	3	1	<b>4</b>	3%

## Photos of articles selected for qualitative analysis

### Page 66

Clockwise:

- The front page of the August 23 issue 1960 (11 items);
- Page 3 press review “Nõukogude teaduse ja tehnika silmapaistev saavutus“ (The Spectacular Achievement of Soviet Science and Technology) from the same issue;
- “Inimese mõistusega, masina kiirusega“ (With the Mind of a Human, with the Speed of a Machine), after N. Kobrinski ja V. Tekelis, July 7 issue 1960;
- front page articles “Orbiidil on piloteeritav kompleks” (The Pilotable Complex is on Orbit) and “Taas teadusesadamasse” (Again to the Haven of Science) from the April 11 issue 1980;

### Page 67

- “Teadlastelt tulevikule” (From Scientists for the Future) by B. Viiding, December 24 issue 1960, page 2;
- Photo by G. Lossi, June 19 issue 1960, page 2. The caption reads: *The young engineer comrade R. Põvat makes preparations for research in the field of industrial gas burners;*
- „Teaduselt tootmisele“ (From Science to Production), anonymous, December 17, 1980;

### Page 68

- „Molekulide saladusi selgitades“ (Explaining the Secrets of Molecules) by V. Hodossovski (TASS correspondent), May 13 issue 1980, page 2;
- „Teadus ja praktika käsikäes“ (Science and Practice Hand in Hand) by A. Paal, July 9 issue 1980.





### LENINI PREEMIA LAUREAATE

## Molekulide saladusi selgitades

Sõnaga "Molekulide saladusi selgitades" on saanud Valguse auhinna 1960 vabariiklikult teadus- ja kunstivallas. Selle auhinna laureaat on Eesti NSV Teaduste Akadeemia professor Valguse, Valguse M. N. Berenski.

Uuema teaduslikud avastused on teadusele andnud uusi mõtteid ja teadmisi. Molekulide saladusi selgitades on saanud Valguse auhinna laureaat Valguse M. N. Berenski. Tema teaduslikud avastused on teadusele andnud uusi mõtteid ja teadmisi.

Molekulide saladusi selgitades on saanud Valguse auhinna laureaat Valguse M. N. Berenski. Tema teaduslikud avastused on teadusele andnud uusi mõtteid ja teadmisi.

Valguse M. N. Berenski on Eesti NSV Teaduste Akadeemia professor ja Eesti NSV Teaduste Akadeemia liiklane. Tema teaduslikud avastused on teadusele andnud uusi mõtteid ja teadmisi.

Valguse M. N. Berenski on Eesti NSV Teaduste Akadeemia professor ja Eesti NSV Teaduste Akadeemia liiklane. Tema teaduslikud avastused on teadusele andnud uusi mõtteid ja teadmisi.

Valguse M. N. Berenski on Eesti NSV Teaduste Akadeemia professor ja Eesti NSV Teaduste Akadeemia liiklane. Tema teaduslikud avastused on teadusele andnud uusi mõtteid ja teadmisi.

### ELEKTER TOLMU VASTU

Kui te tahate vältida elektritõrjumise põhjustatud kahju, tuleb vältida elektritõrjumise põhjustatud kahju, tuleb vältida elektritõrjumise põhjustatud kahju.

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V. HINDROPSKI

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Nr. 158 [11 448] 9. juuni 1960

## Teadus ja praktika käsikäes

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Piltid on Eesti NSV TA Ekspertimisebioloogia instituudi teadurite ja praktikute poolt koostatud. Valt Kest ja Inessa Anna Makarova.

A. PAAL