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ABSTRACT This paper introduces the history of a unique museum of nuclear energy, the Pavilion for Atomic Energy at the *'Exhibition of the Achievements of the People's Economy'* (*VDNKh*) in Moscow, from its inception in 1956 to its closing in 1989. The analytical goal is to unpack the kind of social order that was implicit in the way visitors to the pavilion were envisioned. The paper proposes that the pavilion's exhibitions on nuclear energy, staged as pivotal to *technical* progress, not only reinforced a vision of the country's scientific and technological potential, but also contributed significantly to the Soviet *political* vision. Based on archival documents and published material, the paper traces shifts in the pavilion's tasks, and attempts to convey how these shifts mirror changing concepts of the intended visitors. Moreover, the paper explores how this historical case study speaks to contemporary museum theory, and how this may qualify our understanding of the role of the popularization of science and technology. It addresses differences and similarities between Soviet and Western approaches to public displays of science and technology. While clearly influenced by the tradition of world fairs, the Soviet model of 'disciplining the visitor's gaze' seems to have curtailed the relevance of aspects, such as entertainment or consumption, that started to dominate Western discussions. The prevalent model of visitors was that of enthusiastic learners, and of active contributors to the larger project of constructing a communist society.

Keywords museum theory, nuclear power, popularization, Soviet Union, the public, visitors

Celebrating Tomorrow Today:[1]

The Peaceful Atom on Display in the Soviet Union

Sonja D. Schmid

One of the best-known Soviet sculptures, the 'Worker and Collective Farm Woman', was first presented to an international audience at the World Fair in Paris in 1937 (Figure 1), where it faced the swastika on top of the German pavilion. The monumental steel structure, created by the celebrated Soviet artist Vera Mukhina, until recently guarded the original entrance to the 'Exhibition of the Achievements of the People's Economy of the USSR' (*VDNKh SSSR*). In the summer of 2003, the monument was dismantled for restoration, and is scheduled to be mounted on top of a shopping mall currently under construction at that same location, which would elevate the sculpture to a height close to its original level.

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FIGURE 1
Vera Mukhina, *Worker and Woman Collective Farmer.*

The 'Exhibition of the Achievements of the People's Economy of the USSR' is a remarkable ensemble of pavilions, demonstration facilities, parks, and fountains in north-east Moscow, and extends over more than 2 km^2 (200 hectares) (Figure 2). It has been characterized as 'a crazed Soviet visionary's wonderland' or as 'Soviet Disneyland' (Gambrell, 1994). Its name suggests that it was a show of Soviet achievements, but it was at least as much a materialized vision of the glorious communist future, a beautiful demonstration of future happiness.

I first visited this place in 1994, and was immediately captivated by the traces of bygone glory, blending uncomfortably with the ubiquitous evidence of unleashed petty capitalism. Along the majestic alleys flanked by carefully arranged ensembles of palace-like buildings (pavilions), there are hundreds of small stands, *lavki*, lined up like a permanent camp. Even inside the gigantic pavilions, the halls are now subdivided into tiny cubicles crammed with imported consumer goods. This 'Exhibition of the Achievements of the People's Economy', as it was known for most of its history, had been designed to represent the splendor of the entire Soviet Union in miniature (Petrunia, 1973: 3–4; Paperny, 1985: 158–69).[2] In today's Moscow it seems to live up to this claim; perhaps more than ever, it epitomizes the uneasy coexistence of distinct, contradictory, and potentially incompatible cultural, ideological, economical, and even architectural styles pervasive in post-socialist Russia.

I have two goals in this paper. First, I aim to uncover the history of a unique museum of nuclear energy, the Pavilion for Atomic Energy at the *VDNKh*, and to explain its function within the Soviet system of science popularization. In particular, I explore how the pavilion's activities reflected Soviet concepts of learning, teaching, and entertainment, and how

FIGURE 2
Panoramic view of the *VDNKh*.

they were accommodated to the rhetoric of 'educating and empowering the masses'. Against this background, I focus on the envisioned roles of 'ideal visitors' – that is, on the social, cultural, and political relations embedded in this vision (Welsh, 2000: 32). I attempt to unpack the kind of social order that was implied by the organization and activities of this peculiar space – explicitly, in line with the dominant doctrine of 'molding new Soviet citizens', and more implicitly, in the way visitors to the pavilion were envisioned and how their experiences were shaped. A key event in this context was the severe accident at the Chernobyl nuclear power plant in April 1986, an unprecedented crisis also for the display of nuclear power. This failure revealed the pavilion's 'normal' function, namely the unconditionally optimistic representation of nuclear energy. By exposing the inadequacy of this approach, it posed a severe challenge to the symbolic authority of the pavilion's exhibitions.

The Pavilion for Atomic Energy was a highly visible museum and as such afforded its exhibitions importance and prestige. While its representative location is comparable with the Smithsonian Institution, cultural traditions, and administrative and institutional practices, differ markedly. Museums 'form part of the social fabric' to different extents, and depend 'on combinations of institutional structures and political factors' unique to each country (see Schroeder-Gudehus et al., 1993: 3). By investigating the specific ways nuclear energy exhibitions were deployed to enroll visitors in the common project of constructing communism, I hope to convey the

particularities that ensued from the special status of science and technology in the Soviet context. Ultimately, my project can be read as a test of supposedly universal analytical tools developed in the West. It explores how this historical case study speaks to contemporary museum theory, and how it qualifies our understanding of the popularization of science and technology, especially in comparison with 'propaganda' (I will return to this ambiguous term – suffice it here to plead for suspending our common understanding of propaganda as 'deliberately erroneous information').

Imagined Visitors

Recent work in museum studies has demonstrated that an idea of prospective visitors guides the design of exhibitions from very early stages.[3] Exhibitions frame their visitors in ways similar to the construction of the public in expert–lay interactions. Brian Wynne refers to such framings as 'implicit models of agency', imposed on a group of actors; for example, 'the public' (Wynne, 1995: 378).

Whoever visited the *VDNKh* was supposed to experience 'a peculiar kind of joy' (Paperny, 1994: 42) that the Exhibition organizers skillfully turned into sentiments of awe and pride.[4] The Exhibition's architectural layout with its spectacular buildings, fountains, ponds, and recreational facilities was consciously designed to provide visitors with a beautiful environment, decisively different from their everyday lives.[5] The *VDNKh*'s architecture – like that of world fairs – became an important visual element of Soviet cultural iconography: in the context of the reconstructing the capital city, it had served as a showpiece of Stalinist aesthetics. Its visual culture featured prominently in a series of popular movies during the 1940s.[6] Explicit theatricality was a central feature of this place.

> The All-Union Agricultural Exhibition ... showed the characteristic features of the 'ideal city' of that time: orderliness, exaggerated spaciousness, pompous monumentality, and gloriously shaped buildings ... It was the model of a city of permanent celebration, of a happy and distinct tomorrow that had been transferred from the distant bright future into the present ... Grand portals gave the buildings a touch of sacredness. The demonstrative luxury of this fairy-tale Exhibition city was far removed from the every-day reality at the beginning of the 1950s. But it was not understood as reality, but as promising and reassuring myth. (Ikonnikov, 1994: 35)

As this quote nicely illustrates, visitors to the *VDNKh* recognized its theatrical character. Nevertheless, the combination of these beautiful surroundings with the celebratory display of the Soviet economy's achievements was conducive to the emergence of unreserved enthusiasm. In the 1950s, this atmosphere of utopian optimism, specifically with regard to nuclear energy, was by no means restricted to the Soviet Union. Rather, it was a constitutive feature of any modernist state (cf. Hughes, 1989; Nye, 1994; Welsh, 2000). An intriguing representation of nuclear enthusiasm in popular culture is the Russian version of Woody Guthrie's

anthem to the peaceful atom, *Chto ne mozhet sdelat' atom* [*One Thing the Atom Can't Do*], released in 1980 by the famous Russian singer-songwriter Alla Pugacheva.[7]

The message implicit in this display of Soviet happiness was, of course, the palpable vision of 'the bright communist future', the future social order in neat miniature.[8] As James Scott (1998: 196) has observed, such miniatures – 'small, easily managed zone[s] of order and conformity' – often rose to great prominence. Foreign guests were presented with perfect miniature versions instead of actual farms or factories. Scott (1998: 257) argues that such miniatures ran smoothly, because enough contingent factors could be eliminated.

The symbol (or emblem) of the *VDNKh* (Figure 3) was meant to condense the idea that science and technology were the driving forces of economic and technological progress, which, in turn, would lead to social transformation. Nuclear energy took center stage in this vision:

> United they stand – the worker, the collective farm woman, and the scientist ... Next to them, there is a miner's pick, a sheaf of golden corn. In one impulse, they fling up their working-class hands toward the ... symbol of the atom ... the symbol of the Soviet man's tireless creative search, of his effort to get to the foundation of the world's secrets, to make them instruments of social progress ... That is the emblem of the All-Union Exhibition of the Achievements of the People's Economy of the USSR. (Petrunia, 1973: 3–4)[9]

Driven by this spirit of optimism, the *VDNKh*'s second objective was education. Visitors could browse pavilions that explained the inner processes of meat production, apiculture, horse breeding, or nuclear reactors. But they were not just invited to be dazzled, they were encouraged to actively join the project of constructing communism. As a French journalist put it in the early 1960s, everyone who visited the Exhibition started to think like a statesman, to feel responsible for the entire country (Iakutin et al., 2004), and, more importantly, was expected to do so. The pavilions' exhibitions and the surrounding educational

FIGURE 3
Symbol of the *VDNKh*, 1976. Courtesy of the *GAO VVTs*.

activities served the goal of familiarizing visitors with scientific disciplines, and of rendering sophisticated technologies accessible. But the celebratory display of Soviet achievements was designed to induce more than just passive acceptance: it aimed to transform visitors' attitudes, and '[n]othing short of full hearted commitment would do' (Welsh, 2000: 44).

The Pavilion for Atomic Energy dealt with problems strikingly similar to those at Western science museums, and it anticipated crucial features of contemporary exhibition practices. Sharon Macdonald's description of the exhibition *Food for Thought* that opened at the Science Museum in London in 1989 resonates with the aims and activities of the pavilion's staff:

> The kind of visitor envisaged here is rather different from that of traditional glass case and diorama display techniques. Where these allowed visitors, rather as in the early department stores, to gaze reverentially and deferentially at sanctified objects, *Food for Thought* invites visitors to get close to the objects, to handle – and even to smell – at least some of the goods, to enjoy themselves, to make a noise, to have fun, and ... to be 'busy'. (Macdonald, 1998b: 124)

In this context, Macdonald raises the question whether 'the casting of visitors as "customers" and the emphasis on "consumer choice"' helps to democratize science and to empower the public. She concludes that 'supermarket exhibitions' can have quite opposite effects: they promise to democratize museums by shifting authority from producer to consumer, but they also place 'responsibility for social and individual ills at the door of the individual while ignoring the part that producers and the State may play'. The resulting conflation of pleasure and democracy leads to a 'prescriptive consumerism' that defines personhood in enterprise culture (cf. Macdonald, 1998b: 118–34).

To push Macdonald's department store analogy a little further, let us recall the way Soviet stores were run. In contrast to their Western (and post-Soviet) counterparts, Soviet stores involved a complex system of standing in line, identifying available items, ordering them, paying for them, and actually receiving them, which effectively blurred any clear assignment of responsibility (usually for the lack of available goods). Although I hesitate to infer a conscious program of fusing education and entertainment (*the* central discussion in much of Western museum studies), the *VDNKh* in general, and the Pavilion for Atomic Energy in particular, were designed in stark contrast to the Soviet everyday shopping experience. Here, people were offered help and guidance; they received information brochures, and were shown movies. They were invited to ask questions and even to make suggestions for future improvements. However, responsibilities were by no means more visible in the pavilion than in a department store.

What, then, was an obligatory *definiens* of being 'a Soviet man', and which role did the exhibitions in the pavilion play in suggesting, or even constituting such a 'public identity'? Rather than envisioning the pavilion's visitors as consumers, the Soviet 'model of agency' envisioned them as learners in a traditional enlightenment version. Not unlike in Western

science museums, visitors were expected to deepen their understandings of the topics on display. But 'learning' in the Soviet context had several dimensions, not all of which could be found in a Western setting. First, there was a cognitive imperative: visitors were expected to attain a certain level of scientific literacy, and to then function as multipliers. This did not just apply to teachers – literally everyone was supposed to acquire and to disseminate knowledge. The second aspect was a practical imperative: visitors from industry were expected to facilitate the actual implementation of the new technologies on display. This orientation toward practical applications has been described as one of the defining characteristics of Soviet science (cf. Ivanov, 2002). The final aspect, which also formed the basis of the first two, was a moral imperative: visitors were expected to be enthusiastic, feel pride, and become loyal supporters of the communist project. In a way, this was almost a religious imperative (comparable with a view of London's Natural History Museum as a 'cathedral of nature') – a curious feature in the context of an explicitly atheist State.

The *VDNKh*'s approach to science popularization was thus not entertainment, and presumably not even persuasion, but was one that emphasized the overwhelming authority of 'scientific exhibitions' themselves. This authoritative image of science was effectively invoked despite the fact that what constituted science in a socialist society had been a contested issue (Ivanov, 2002). The display of Soviet science and technology was intended to enroll visitors: to inspire, convince, and mobilize them to become creative participants in the construction of Communism.

Theoretical Framework

An integral part of any museum is an effort to discipline the visitor's gaze, and to shape the visitor's experience. The choice of artifacts, the labeling of exhibits, and the spatial and logical connections among them, reflect the agendas of exhibition organizers, sponsors, or political patrons (Alpers, 1991). Yet to an even greater extent, exhibitions mirror their intended publics. Every public display projects its visitors' desirable activities in and around the exhibition. Museums are therefore crucial places for negotiating identities. On the basis of predominantly Western case studies, museum researchers have developed a series of theoretical concepts for analyzing the display of science, which take into account the perceptions of visitors, the influence of economical factors, and political agendas.[10] They have identified fundamental tensions between representing and celebrating science, and between the impulse to educate and the attempt to entertain. Some of these tensions have intensified historically (for example, the discussion about interactive exhibits and their alleged failure to convey historical dimensions of science [Barry, 1998; Gregory & Miller, 1998]). It is legitimate to ask whether such Western concepts are applicable to the Soviet context, and for which period, but I have found these approaches useful for two reasons.

First, Soviet scientists have always had a good reputation among international exhibition-makers for their creative and inspired ways of popularizing science and technology (cf. Schroeder-Gudehus & Cloutier, 1994: 168). Science popularization in the Soviet Union was something that helped rather than hurt a scientist's career (Gregory & Miller, 1998: 81–86). There is a long tradition of Russian, and later Soviet, scientists who supported the science popularization movement and considered popularization an integral part of their work (Andrews, 2003). The political ramifications and constraints in the Soviet Union notwithstanding, science popularizers there have faced the same challenges as they would anywhere else. For example, they must figure out how to phrase and visualize complex scientific contents in ways intelligible to a lay audience, and how to arouse the audience's curiosity and enthusiasm. Soviet science generally was very explicit about its educational objectives, which were often synonymous with straightforward political goals (Kuz'mina, 1991). Science education therefore was both an enlightenment activity and a political goal; scientific literacy was considered a contribution to the political vision of a communist society.

There is some confusion about the exact meaning of the term 'propaganda', even in the Soviet sources I used, but it is crucial for understanding science popularization in the Soviet context. In its original meaning, 'propaganda' denotes dissemination (from Latin *propagare:* to disperse, diffuse, disseminate) of political, scientific, and other knowledge, views, and ideas (Vavilov, 1949–58, vol. 35: 70). In a more specific sense, propaganda can be focused on production and technology (*propaganda proizvodstvenno-tekhnicheskaia*), with the explicit goal of supplying workers with technical knowledge, which is supposed to overcome existing differences between mental and physical work, and to raise 'communist awareness' among the masses (pp. 73–74). Propaganda also has the goal of affecting people's mindset and of stimulating active responses (Prokhorov, 1970, vol. 21: 95). Communist propaganda had the explicit goal of enlightening, educating, and mobilizing the masses, 'by enrolling them into the practical fight for socialism and communism'. The criterion for assessing the effectiveness of communist propaganda was 'the level of social activity among the masses' (p. 96). Bourgeois propaganda, by contrast, was depicted as an instrument used by the ruling classes to present *their* interests as those of everyone. At the same time, bourgeois propaganda allegedly denounced 'propaganda' as an instrument to manipulate mass consciousness in the interest of certain political groups (1970, vol. 21: 96). In contrast to some Western science-popularizers, who to this day claim to be politically neutral,[11] the Soviet popularizers explicitly supported mixing science popularization with political ideology. They considered 'scientific objectivity' a bourgeois concept to be replaced with a desirable 'proletarian bias' (Hollander, 1972, 39).

The second reason why I have found Western museum theory valuable for analyzing this Soviet case is that a common origin in world fairs links science displays worldwide. There is an extensive body of literature on

world fairs that examines the relations between science, the state, and the public. This literature shows how the display of science relates to the projection of social order (Roesch, 1962; Rydell, 1984, 1993; Graham, 1990). Robert Rydell has shown that world exhibition promoters were often explicitly motivated by economic ideas. World fairs 'showed off the nation's economic strength and artistic resources, highlighting new architectural forms and offering models for urban planning' (Rydell, 1984: 2). In addition to emphasizing economic motives, Rydell argues that they provided a 'cohesive explanatory blueprint of social experience' (p. 2). Although clearly not all museum exhibitions were equally influential, some of them represented authoritative means to shape, sustain, or change social order (Rydell, 1984; Mitchell, 1988; Schroeder-Gudehus et al., 1993; Barry, 1998; Bennett, 1998). The *VDNKh* was an attempt to sketch a communist social order based on sound scientific and technological performance, and to assign visitors new subject positions within that order.

Sources

In winter 2001, I conducted research for this project in the scientific-technical library and the archive of the *VDNKh*. The *VDNKh*'s official publications espouse a rhetoric of openness, stressing the unusual degree of technical information made available to visitors – even foreigners. I was granted access to all archival documents I requested. I was able to study annual reports about exhibition activities in and around the pavilion; to read provisional and final plans of the exhibits, texts, and models on display (so-called '*tematikcheskie plany*', preliminary drafts of exhibition concepts, and '*tematiko-ekspozitsionnye plany*', revised and authorized versions of the former), and to study lists of actual exhibits and the original labels to the exhibits, as well as guest books.[12] In the *VDNKh*'s scientific-technical library, I read official publications including guidebooks and journals published by the *VDNKh*. I also looked at brochures and catalogues for the Pavilion for Atomic Energy – material that was more explicitly targeted at a specialized audience. The library also holds a list of legal decisions pertaining to the *VDNKh*, which allowed me to quickly identify relevant decrees issued by the Central Committee and/or the *VDNKh* administration. Finally, I asked archivists and librarians about their experience working at the *VDNKh* both prior to and following the *perestroika* years. I talked to former administrators of individual pavilions, and to a former curator and guide of the Pavilion for Atomic Energy.

The Academy of the People

In 1959, the Soviet government under Khrushchev had scheduled a 7-year plan for 1959–65. The motto was once again to 'catch and overtake' the most developed capitalist countries. The Communist Party had used this slogan since the late 1920s (Kotkin, 1995: 42–54), ironically calling for overtaking capitalist societies by reaching their very goals (Weiner, 1988). The *VDNKh* was supposed to exhibit past successes, but also 'to tell about

the way tomorrow will look like in the Soviet Union' (Zherdetskaia, 1962: 1). The creative efforts undertaken to reach this goal were described in an illustrated brochure '*VDNKh SSSR*', published in four foreign languages and Russian, which compared the Exhibition ensemble with an 'academy of the people', and portrayed it as 'the anthem of Soviet man who has approached the threshold to Communism' (Zherdetskaia, 1962: 5). Workers, farmers, and intelligentsia were to be united: 'the character of labor is being transformed fundamentally; the cultural-technological level of workers is rising, and the prerequisites are created to level out the differences between mental and physical work' (Zherdetskaia, 1962: 3).

The first steps to establish an 'All-Union Agricultural Exhibition' (*Vsesoiuznaia Sel'sko-Khoziaistvennaia Vystavka*, *VSKhV*) had been taken in the mid-1930s; the Exhibition had opened in 1939. During World War II, the Exhibition was evacuated to Cheliabinsk, and reopened in Moscow in August 1954. In 1956, the 'All-Union Industrial Exhibition' (*Vsesoiuznaia Promyshlennaia Vystavka*, *VPV*) was launched in the same territory. Its buildings, including the original Pavilion for Atomic Energy, were clustered around 'Mechanization Square' (left circle on the map in Figure 4). In the summer of 1959, these two exhibitions (and the All-Union Construction Exhibition that was moved from the Moscow river bank)

FIGURE 4
Map of the *VDNKh* (then still divided into *VSKhV* and *VPV*). Published in Tikhanov 1957, back insert. Reprinted with permission of *Izd-vo "Mashinostroenie."*

were united to form the 'Exhibition of the Achievements of the People's Economy' (*Vystavka Dostizhenii Narodnogo Khoziaistva*, *VDNKh*). Even before this merger, guidebooks portrayed them as a single exhibition ensemble. Complete tours included pavilions of both the Industrial and the Agricultural exhibitions, following pre-selected routes (Tikhanov, 1957: 7).

From 1959 to 1963, the *VDNKh* consisted of four sections: union and national pavilions (the Russian Federal SSR had three), industry and transport (the former Industrial Exhibition), agriculture (the former Agricultural Exhibition), and construction (the former Construction Exhibition). The pavilions' contents tended to change frequently; the pavilion housing Atomic Energy since 1964, for example, was originally designed to exhibit the Black Soil Region, and served as the Russian Federal SSRs industry pavilion until 1964. In his *Kul'tura 'dva'*, a structuralist analysis of Stalinist architecture, Vladimir Paperny argues that the *VDNKh* was designed as a miniature Soviet Union within the Union's capital Moscow (Paperny, 1985). He stresses that the central republic, the Russian Federal SSR, was originally not represented by its own pavilion. Castillo calls the absence of a pavilion dedicated to the Russian republic 'something of a Soviet exhibitionary tradition' (Castillo, 1997: 95). However, he also reports the creation of a pavilion representing the Russian Federal SSR in 1954 (Castillo, 1997: 113). Since the establishment of the Pavilion for Atomic Energy in 1956, the Russian Federal SSR was in fact represented – it even featured three pavilions. In April 1963, a decree issued jointly by the Central Committee and the Council of Ministers ended the mini-Union model in an attempt to systematize the assignment of pavilions.[13] A section for science and culture replaced the section of union and national pavilions – a symbolic move indeed!

The *VDNKh* was managed by a committee including leading representatives from the Ministries, State and departmental committees, the Party organization, and trade unions. This committee was in charge of defining the major directions of the *VDNKh* and determined its fundamental tasks, which can be summarized as showing the achievements of each of the economy's branches and their prospective development *in its entirety* – that is, displaying the full historical scope of each branch's development. Together with regular museum activities (setting up exhibitions) the *VDNKh*'s tasks also included pedagogical activities (teaching specialists from the respective branches) and – the most original aspect – providing a forum to facilitate the exchange of experience. This practical orientation of science is a Stalinist legacy, and has been characterized as a defining feature of Soviet science (Ivanov, 2002: 317–18). Technical documentation was to be distributed through the exhibition, and the fastest introduction into production was to be rewarded with medals and diplomas. Each republic was expected to send representatives to Moscow to visit the *VDNKh*, to take part in seminars, and to learn about the latest innovations.

A Palace for Atomic Energy

The original Atomic Energy Pavilion was part of the All-Union Industrial Exhibition (*VPV*), which represented the major branches of Soviet industry from 1956 until 1959. The pavilion was located on a side street in the vicinity of Mechanization Square and today houses exhibitions on (of all themes) environmental protection. In 1959, the first year of the *VDNKh*, the adjacent pavilion was annexed and the label changed from 'Atomic Energy' to 'Atomic Energy for Peaceful Purposes'. Neither the archival documents nor the published sources I consulted attribute the emphasis on *peaceful* applications of nuclear energy to attempts to 'detract popular attention away from the image of science bent on nuclear war and destruction' (Schroeder-Gudehus & Cloutier, 1994: 174). Instead, the Soviet Union was being associated with peaceful nuclear applications in industry, agriculture, and medicine through a consistent emphasis on the *scientific* character of Soviet industrial planning. Military applications were stressed as primary goals of the USA, which in turn legitimated Soviet efforts to defend peace against imperialistic aggression.

In 1964, as a consequence of the decree mentioned above, 'Atomic Energy' moved to a new building altogether. This new building was located on the central square, close to the main entrance (right circle on the map, Figure 4). Since 1989, it has been used for commercial purposes only. In recent years, even the label 'Atomic Energy' was replaced by one indifferently stating 'Pavilion No. 71'. On the following pages, I will outline the 'inner workings' of the Pavilion for Atomic Energy – how exhibitions were organized, and who the actors and their tasks were.[14] All of these aspects, especially the pavilion's spatial and logical arrangement, and the organization of interactions within the pavilion, provided a repertoire of actions for both visitors and staff, thus contributing to the conception of the ideal visitor. A detailed examination of the pavilion's activities will reveal the models of agency implied by the pavilion's exhibitions.

Ordering Space

The pavilion's spatial organization was designed to provide a stable framework that would reliably direct visitors through the exhibition, whether on guided tours or on their own. The original building (1956–63) had four halls, and visitors were guided through all of them in a circuit (see floor plan, Figure 5). The entry hall displayed scientific exhibits on the basic structure of atoms and the mechanics of nuclear fission, chain reaction, fusion, and so on. It also displayed the development of Soviet nuclear physics and particle physics, with due reverence to past and current Party leaders. In the second hall, one could find samples of uranium minerals and ores, and information about how they were processed and applied in chemical processes and nuclear reactors.

A working reactor took center stage in the next hall (Figure 6), the

FIGURE 5
Original Pavilion for Atomic Energy, floor plan, 1957. Courtesy of the *GAO VVTs*.

section on nuclear power engineering (Popov & Aleshin, 1956: 58; Tikhanov, 1957: 4, 15–25; Lavrovskii, 1958: 15; Novakovskii, 1959: 82). The reactor was submerged in a basin filled with water, which simultaneously served as moderator, coolant, and shielding. The basin was 6 m deep and 4 m in diameter, and the reactor's nominal power was 100 kW (Aleksandrov, 1988: 463). A technician was in charge of operating the reactor, and conducted small experiments for the visitors. Visitors were invited to witness the Cherenkov effect, a bright blueish-green shining caused by the partial transformation of the reactor's radiation energy into light. The explicit rationale for putting a nuclear reactor on open display was 'to enable visitors to get to know the construction and operation of a nuclear reactor more graphically' (cf. *Vsesoiuznaia promyshlennaia vystavka*, 1956: 53). According to both archival documents and published sources, it was the most popular exhibit for years, and when the *VDNKh*'s management (note: not the pavilion's) ordered the reactor to be shut down in 1962

FIGURE 6
Demonstration reactor on open display in the original Pavilion for Atomic Energy, 1957. Courtesy of the *GAO VVTs*.

without giving reasons, the pavilion reported many complaints from disappointed visitors.

While the display of this reactor was unique, given the state of the art of radiation safety at that time (1956–62), it was not the first demonstration reactor exhibited in public. In 1955, at the First Geneva Conference on the Peaceful Uses of Nuclear Energy, the USA had displayed a working reactor. This Geneva reactor, referred to as 'Project Aquarium', was a temporary exhibit that was accessible to the general public only for a limited time (Fermi, 1957: 108). Apparently, it inspired the organizers of the 1958 World's Fair in Brussels, who planned to set up a working reactor as the centerpiece of the Science Hall. The idea was abandoned only after the Belgian king vetoed it (cf. Schroeder-Gudehus & Cloutier, 1994: 175–78). References to the US reactor displayed in Geneva are missing in the Soviet documents I read.

The section on nuclear power engineering also exhibited a large model of the Soviet Academy of Science's experimental nuclear power station (1:40 scale), as well as smaller models of experimental and research reactors and of fusion reactors. In addition, there were detailed displays of Soviet nuclear power plants then under construction: the stage of their completion was meticulously updated every year. The section also featured a model of the nuclear icebreaker *Lenin*, which was in later years replaced by its successors, *Arktika* and *Leonid Brezhnev*. The final hall showed

various research and diagnostic instruments based on the use of radioactive isotopes.

Only some of the objects on display had already been introduced to the economy. Others were inventions pending their patenting, and improvements or prototypes awaiting their actual implementation. In 1979, for example, the pavilion featured a model of the RBMK-2400 (a scaled-up version of the graphite water reactor RBMK-1000), which was never actually built.[15] There was no clear spatial separation of tasks between the original and the second, adjacent, building. It was not until 1963 that the pavilion's management decided to use the second pavilion as a separate location for a thematic exhibition. When nuclear energy moved to the new building in 1964, the possibility of reaching various halls independently opened up new perspectives for organizing space, and thus for addressing different audiences. In some years, the new pavilion's floor space was even 'rented out' for non-nuclear exhibitions: in 1977, for example, the pavilion hosted an exhibition celebrating the 60th anniversary of the Russian Federal SSR.[16]

Structuring Experience

From its outset, the pavilion had featured a remarkable variety of exhibitions, with constantly changing layout, function, and intended audience. There was always one *main exhibition*, which had a permanent character although it was updated annually. *Special exhibitions* were part of the main exhibition. In 1978, for example, the pavilion organized a special exhibition on 'Peaceful Nuclear Explosions'.[17] In 1983, a special exhibition posthumously honored the 80th birthday of one of the 'fathers' of the Soviet atomic bomb, Igor V. Kurchatov, who was revered as the archetype of the loyal, upright Soviet scientist, and as the main promoter of peaceful nuclear applications (Aleksandrov, 1988; Holloway, 1994; Kuznetsova, 2002).[18] *Thematic exhibitions* were targeted at particular audiences who were likely to play a role in the future implementation of the technology displayed. In 1984, for example, the pavilion featured a thematic exhibition on nuclear energy in the food processing industry. The first *traveling exhibition* ('The Atom for Peace') was organized in 1964. Such mobile exhibitions were shown in cities all over the Soviet Union in order to reach people outside the capital. The annual report for 1971 mentioned an increase in active marketing measures for traveling exhibitions.[19] Movies were introduced to accompany and advertise the shows, the host cities provided well-equipped meeting rooms, and the exhibitions themselves included price lists of available products, as well as information on vendors. Both thematic and traveling exhibitions had the goal of conducting effective scientific and technological propaganda: to celebrate past achievements, to educate visitors about the advantages of nuclear energy applications, and to promote the future adoption of innovative technologies.[20]

Among the services offered by the pavilion were guided tours, small

experiments or demonstrations performed by technicians, short movies, and a variety of free information brochures. In addition, there was a bookshop and an information point near the entrance. Practical changes came about relatively late, in 1980: instead of closing the entire pavilion for several months each year, parts of the pavilion's exhibition remained accessible while others were renewed. The pavilion also accommodated lectures, workshops, and seminars, ranging from one to five days. Such events included 'The Day of the Exhibitor', and 'The Day of the Propagandist'. I am not clear what the ultimate goal of these workshops was. It seems likely that they had the pragmatic aim of getting orders placed for new technologies, but my sources lack definite information on what happened next. Were requests handed over to the relevant ministries? Who decided what to implement where, and when? And, in a centrally planned economy, how autonomous were representatives from industry or public health in deciding which apparatus or instrument they wanted to order and apply to industry?

Judging from my material, the pavilion's activities became more sophisticated starting in 1964, with the move to the new building. Together with an increasing emphasis on advising specialists, questions about patents, licensing, and visitor service were being discussed. It seems puzzling that this leap to professionalization went hand-in-hand with appeals for a more centralized administration and coordination of exhibition activities, for an evaluation of the pavilion's activities, and for Exhibition-wide standardized regulations.[21] At first glance, this may seem like a naive attempt to secure a set of objective procedures in the context of inherently unstable and unpredictable political patronage. However, the archival documents suggest that this endeavor to adopt standardized rules was a strategic maneuver. Starting in 1982, the pavilion's staff used the same *VDNKh* regulations it had promoted earlier to put pressure on the State Committee for the Use of Nuclear Energy (*Gosudarstvennyi komitet po ispol'zovaniiu atomnoi energii*, *GKAE*). This agency had been established in 1960 under the Council of Ministers, replacing its predecessor, the Chief Administration for the Use of Atomic Energy (*Glavnoe Upravlenie po ispol'zovaniiu atomnoi energii*, *GU IAE*). The *GU IAE* had been part of the Ministry for Medium Machine Building (*MinSredMash*), one of the most powerful Soviet ministries that administered the entire nuclear military–industrial complex. In 1965, the *GKAE* lost its independent position under the Council of Ministers and was reintegrated into *MinSredMash* (Sidorenko, 2001).

By invoking official regulations, the pavilion's staff urged the *GKAE* to carry out its tasks and to take its duties seriously, for example to deliver models on time,[22] to provide the pavilion with new technical equipment, and to renew popular scientific movies shown to the visitors, which they labeled 'morally and physically outdated'.[23] Despite these efforts, the *GKAE*'s special status was cemented in 1984: it was officially exempted from *VDNKh* regulations.[24]

Taking Parts

The Pavilion for Atomic Energy was managed by a collective headed by a designated director and a chief curator. The curators – most of whom had backgrounds in physics or science education – selected and arranged the individual exhibits, drafted the labels to the exhibits, designed the exhibition layout, wrote exhibition plans, and scheduled tours and movie screenings. Administratively, the pavilion was accountable to the State Committee for the Use of Atomic Energy (*GKAE*) and to the *VDNKh* Committee. In 1978, the annual report announced a more restricted inter-branch technology transfer. From that year on, implementations were regulated by certain rules, and responsibilities were more clearly defined. It was made explicit that there were 'open' and 'classified' developments, with the pavilion's role defined as promoting the non-classified technologies. This marked an important shift, as duties were moved away from the pavilion (and the *VDNKh*) to the *GKAE*. Whereas before, nuclear energy had been referred to as a branch of industry like any other, it was now considered 'special'.[25] This was probably not a true adjustment, but nevertheless this 'special status' needed some clarification, even to the actors immediately involved. The pavilion's annual report for 1980 contains an illuminating passage: the pavilion's management had written an official letter to the *GKAE* to find out why they no longer received any information about the effects of implementing the technologies displayed in the pavilion.[26] In response, they were told that there was a difference between the 'real' nuclear power business and the *VDNKh* exhibits. This marked a turning point in the pavilion's self-perception, and had important consequences for its position within the Soviet science system. Since its inception, the pavilion had considered this kind of feedback vital for one of its key tasks: facilitating the active and open exchange of information and experience about the technical performance and economical effectiveness of new technologies. Now, it had to find a way to legitimate why – in contrast to most of the other pavilions at the *VDNKh* – it did not exhibit the results of its popularization and promotion efforts.[27] As a result of these changes, the arrangement of special exhibitions and accompanying seminars to exchange professional experience was handed over to the *GKAE* as well.[28] In 1981, the pavilion abandoned the practice of identifying 'pioneering collectives' (the first who implemented new technologies) on the *VDNKh*'s 'All-Union Board of Honor'.[29] And in 1982, the pavilion discontinued making recommendations for the introduction of particular exhibits – potentially a concession to the increasing difficulties encountered with their actual implementation (cf. Welsh, 2000: 208).[30]

The pavilion's managing collective wrote plans for every exhibition several months in advance. These plans comprised details of the objects to be displayed, including their labels and the institutes and factories that provided them. Members of the *GKAE* and the *VDNKh* committee revised these plans twice before approving them, and visited the pavilion before the exhibitions officially opened. The pavilion's staff also had to submit an

annual report to these agencies, which was usually about 15 pages long and summarized the pavilion's activities over any given year, complete with basic statistics on visitors, exhibitors, and awards. They listed thematic, special, and traveling exhibitions, identified the most popular exhibits, reported on particularly successful events, and commented on the guest-book entries. They also identified problems and made suggestions for handling them in the future.

It seems that for the pavilion's managers, writing these reports was both a tedious obligation to their superiors, *and* an opportunity to reflect upon and evaluate their own work. Apparently, there was hardly any feedback to these reports: in 1966, the pavilion's director specifically asked for a response to the annual report, and when there was none, the 1967 report shrunk to a meager three pages. Two years later, the files included a response from a *VDNKh* administrator – with hand-written annotations from the pavilion's staff. This again illustrates that the pavilion's administration cared about their work; they were determined to establish explicit criteria for quality control. A related problem that was repeatedly addressed in the annual reports was the lack of autonomy in decision-making. The pavilion's staff clearly felt restricted by the amount of red tape they had to deal with, and by the lack of distinct regulations for exhibitors. In some years, the opening date of an exhibition had to be postponed due to delays in the delivery of exhibits. Despite the fact that there was obvious (and due to the bureaucratic procedures very laborious) top-down control, the pavilion's superiors displayed a striking lack of interest in the actual results of the shows they presumably supervised.

The pavilion's guides were particularly relevant for interacting with visitors: they told their groups previously approved stories, showed them short popular scientific movies, and handed out brochures. Coming from more diverse backgrounds than curators, they received intensive additional training, both in specially devised courses and through expert consultations 'on site'. Guides were audited for political loyalty, and had to demonstrate on a regular basis their command of the technical knowledge that was deemed relevant for the current exhibition. In the late 1970s and early 1980s, several of the pavilion's guides successfully took part in *VDNKh*-wide competitions for 'best guide'.[31] Other actors who worked in the pavilion included operators and technicians who performed live demonstrations in the exhibition halls (see Figure 7), specialists from the *GKAE* who operated the information point in the pavilion from 1965 on, and exhibitors – scientific institutes, construction organizations, factories, and production companies who supplied the exhibits.

Who, then, were the visitors – the people the pavilion wanted to reach with its exhibitions? The pavilion's annual reports generally distinguished two main categories: specialists and non-specialists. Engineers, physicians, ship builders, or military personnel were identified as specialists, whereas schoolteachers, students, workers, as well as regular members of the Party and trade unions, were characterized as non-specialists. While the former received individual consultations upon request, the latter were

FIGURE 7
Operator in the Pavilion for Atomic Energy, 1956. Published in Popov & Aleshin, 1956: 63. Reprinted with permission of *Izd-vo "Mashinostroenie."*

offered standardized tours. Other categories of visitors mentioned in the pavilion's documents were foreigners, both as official delegations and individuals, and prominent scientists. For example, in 1972, members of the Academy of Sciences visited the pavilion, and in 1973, the pavilion proudly reported a visit by physicist Sergei P. Kapitsa, the son of Nobel laureate Petr L. Kapitsa.

The *VDNKh*'s management was obsessed with counting: part of the standardized format of an annual report was to chronicle meticulously the number of visitors, exhibits, exhibitors, square meters of exhibition space, and so on. As far as I can tell, the purpose of this kind of documentation was not just to show off, but to anticipate future resource allocations. However, as Steven Solnick has shown convincingly, the pressure to meet and even over-fulfill plans rendered this bureaucratic mechanism virtually ineffective (Solnick, 1998). In 1981, the pavilion proudly reported an increase in visitors, which was subsequently explained by the pavilion's extended opening hours.

My interest here is different from what has become known as 'visitor studies'. Visitor studies are more or less statistically oriented and quantitatively analyzable polls (Bicknell & Farmelo, 1993; Pekarik et al., 1999). By contrast, I tackle the notion of 'the visitor' that 'visitor studies' operate

with. And although I did not intend a quantitative assessment of visitors, I did count the visitors to the pavilion: from an all-time record of almost 1.5 million in 1959, the numbers decline consistently, dropping below 1 million in 1969 (with the exception of 1981: ca. 1.07 million). In 1985, the numbers were below 200,000; they jumped back up in 1986 (370,000), and there are no data available for the pavilion's final years. The number and circulation of available information brochures, by contrast, increased steadily.[32] The numbers cited in the annual reports indicate that individual visitors always outnumbered those who came as organized groups. The pavilion's guides gathered individual visitors into groups whenever possible (guided tours had an average of 20 participants), but the vast majority of visitors still browsed through the halls on their own (Figure 8). Visitors were expected to listen attentively, to learn, but also to ask questions and request more information. Young children in particular were encouraged to push a few buttons and to operate the hands-on exhibits.

Visitors were also invited to write their comments into a guest book, which was diligently read by the pavilion's staff and probably by other authorities as well. The pavilion emphasized that the relationship between visitors and pavilion staff was determined by a 'common interest' – the wish to know and celebrate Soviet achievements in nuclear technology – where the visitors' interest was presumably distilled from guest book comments. The guest books contained additional information on individual visitors, since visitors usually signed their comments with their name, place of residence, profession, and employer. However, guest books are a precarious source. It is unclear who actually wrote the comments, let alone how representative or accurate they were. There are good reasons to assume that many of these comments, rather than expressing individual

FIGURE 8
Individual visitors browsing a thematic exhibition on radiation protection. Published in 1962 in *Atomnaia Energiia* 13/6: 613; reprinted with permission of *Atomnaia Energiia*.

visitors' opinions, reflect 'desirable' reactions and were carefully crafted along approved lines of official ideology: one needs to consider that the writers disclosed their full identity, and they were well aware that their comments would actually be read. On 22 December 1980, for example, for the *Den' energetiki* [*Day of the power engineer*], I found the following entry in the guest book:

> The construction specialists of the Kursk, Chernobyl', and Smolensk nuclear power plants ... express deep acknowledgment and gratitude for a well-organized exhibition and a high quality seminar. Broadening one's horizon regarding the applications of nuclear energy will certainly have a positive influence on improving the design quality and the safe operation of nuclear power plants. For 60 specialists from the Institute 'Gidroproekt', Director of the Technical Department on Nuclear Power Plants [followed by a signature].[33]

This comment is worth mentioning because it surpasses the usual expressions of gratitude and contains some hidden criticism by implying that quality and safety in the nuclear power industry might be enhanced. Also, the author considers it necessary to hedge his comment by mentioning that he is writing in the name of 60 (!) specialists.

The 'common interest' could thus have been – and most likely was – an artifact of the specific setting.[34] The guest-book readers not only ticked the comments off, they actually reacted to them: I came across one case in which a guide who had repeatedly received negative visitors' comments was subsequently fired.[35] Visitors' comments played an increasingly important role. In 1978 and 1979, the *VDNKh* conducted a competition for best visitor service, and in 1980, during the Olympics, visitor service was once again improved. This time, service for foreign visitors was emphasized by putting guides through some sort of intercultural training; the report also stresses a massive clean-up program in and around the pavilion.[36] The emphasis on staff training apparently paid off: from 1976 on, the pavilion's guides regularly won awards for 'excellent visitor service'.[37]

I found the only *explicit* image of an ideal visitor in the annual report for 1984, where visitors were envisioned as learners: 'The exhibition in the Pavilion for Atomic Energy has not just scientific character; it also has an enlightening function for various kinds of visitors: foreign tourists, visitors from the masses, and students'.[38] The expositions, conceptualized to be intrinsically scientific, were intended to 'deepen the visitors' understanding of the topic'. However, this was a different kind of learning than in earlier years, where the emphasis had been on the actual adoption and implementation of innovations.[39] In 1984, visitors were no longer envisioned as active collaborators, but as more passive spectators who were expected to look, to acknowledge, and to feel proud. As Brigitte Schroeder-Gudehus and David Cloutier found, at world fairs during the Cold War 'the function to convey effective knowledge declined, [but] there remained – and prospered – the function of conveying convictions' (Schroeder-Gudehus & Cloutier, 1994: 180). The *VDNKh* never seems to have lost its enlightenment mission. The significance of the practical imperative of learning

decreased, while the cognitive and moral imperatives remained important. This shift might be interpreted as reflecting the stabilization of the nuclear industry by 1984 and its successful integration into the Soviet economy. It could also be attributed to the restricted role the pavilion had been assigned during the late 1970s, when the *GKAE* had taken over the tasks of training and implementation. Thus, we can read changes in the projection of the 'ideal visitor' as reflections of the pavilion's shifting role within the system of science popularization, and as reactions to the overall development of the branch of industry that the pavilion represented.

While visitors were being assigned certain models of agency, a parallel development involved the pavilion's staff: their own professional identity as 'popularizers' of nuclear energy was gradually taking shape. They came to occupy a peculiar position in the hierarchy of Soviet institutions, where they negotiated exhibition designs with responsible State and Party agencies. They also communicated with research institutes and design and construction bureaus about possible ways of visualizing complex theoretical concepts and of exhibiting highly specialized, expensive frontier science. In addition, the pavilion had to carve out its own niche as an educational enterprise while cooperating with universities and different types of schools.

Setting Goals

The pavilion was pursuing a series of tasks. First, it was expected to serve the technical progress of Soviet industry. The expositions were to show the latest achievements in automation, mechanization and other forms of progress, facilitate the distribution of technological know-how and the promotion of new developments, and testify to the increased speed of applying the latest scientific and technical innovations to production processes (Tikhanov, 1957: 3). In this context, the pavilion was also a zone of coordination – at least in its early years. It received reports from companies and factories, where workers and engineers had successfully adopted new technologies they had learned about at the *VDNKh*. This feedback was incorporated into the next exhibition when models or prototypes were exhibited next to successfully implemented technologies. Another major goal was to introduce workers and specialists from industry, agriculture, unions, and Party organizations to the world of nuclear energy. They were addressed as multipliers and expected to spread the word in their respective spheres of influence. The third task was to facilitate the exchange of experience with new technologies, with a clear emphasis on economic efficiency. As early as 1968, the stress on economic efficiency and profitability was perceived as too dominant and at odds with 'the original idea of the *VDNKh*', which had been to link the *demonstration* of achievements with their actual *implementation*.[40] This kind of economic thinking might have been perceived as incompatible with the idea of progress along logical, scientific lines.

The significance allotted to these different tasks shifted over the years. In 1964, the emphasis was clearly on teaching and on consulting specialists. For these ends, the pavilion maintained successful cooperation initiatives with several educational institutions. 1964 was an important and innovative year for several reasons. It was the first year in the new building, at a new location, but it was also the year the first traveling exhibition was designed (which was handed over to the Polytechnic museum[41]). A pavilion-wide radio system was set up. The pavilion pushed a new organizational structure, claiming the *VDNKh*-wide coordinating role for all things nuclear, including medical, biological, agricultural, and industrial applications that other pavilions had given some attention. The pavilion's management explicitly set out the goals of standardizing regulations for exhibition activities, identifying economically efficient exhibitions, and significantly increasing the number of visitors. The management also filed complaints about out-dated brochures, and requested additional staff members. The flexibility, or *smennost'*, of an exhibition became a key criterion.

The archival material does not convey these developments as reactions to changes in overall regime policy, but the concurrent economic reforms, including the reintegration of the *GKAE* into an essentially classified ministry, are likely to have had repercussions for the pavilion's work. Also, the international exchange of museological concepts and practices following the first three Geneva conferences on Peaceful Uses of Atomic Energy (in 1955, 1958, and 1964), which involved exhibitions on nuclear themes, may well have advanced and accelerated these internal improvements. By 1966, 'representing nuclear energy in its entirety' with a linear historical narrative was considered the foundation for teaching and for the exchange of experience.[42] The reports started complaining about overlaps in the development and production of technologies. Responsibilities were unclear as to who produced and who distributed technologies. As an 'interdisciplinary' pavilion, the Pavilion for Atomic Energy suffered directly from conflicts of interest among different ministries.[43] The stress on exhibiting and the unclear jurisdiction also prompted a request for more research on visitors' responses.[44]

The task of 'exchanging ground-breaking experience' that had been the fundamental impetus for the original pavilion had disappeared from the annual reports by 1976. Instead, the exhibition's tasks were explicitly determined as 'active propaganda of the latest achievements of nuclear science and technology, and teaching of workers from different branches of the people's economy'.[45] Gorbachev's *perestroika* in the 1980s involved the reorganization of the entire system of education, and the pavilion was determined to establish itself as a permanent actor under the modified circumstances. The curators envisioned the pavilion's role as attracting new cadres to the field of nuclear science and engineering. Therefore, they organized 'days of knowledge', a kind of orientation event for high school graduates who were considering studying nuclear physics or a related discipline at an institution of higher education.[46]

In 1986, the pavilion's annual report recounted that during that year:

> Curators and guides had the special responsibility to inform [visitors] about the accident at the Chernobyl nuclear power plant and about the mitigation of its consequences. Using trustworthy information, the pavilion's staff clarified the announcements made by the Council of Ministers and the speeches given by members of the governmental commission at special Politburo meetings regarding this problem.[47]

I find it noteworthy that the authors used such expressions as 'to explain', 'to lay out', and 'to clarify', in order to characterize their activity. Why their information sources were trustworthy or what these sources said, remained unmentioned in the report. Nevertheless, despite a lack of clear and consistent instructions from above, the curators and guides seemed to have taken up the challenge of mediating between the State officials, scientific experts, and the citizens who flooded the pavilion and inundated them with questions.[48] Almost 2 years into *perestroika* (the 1986 report was written in spring 1987), the pavilion's staff must have been aware of the potential consequences of the Chernobyl disaster for their project. Consequently, the 1986 report advanced a remarkable suggestion, namely, to shift the exhibition's emphasis from the celebration of past achievements and the promotion of future benefits to commenting on *current problems* of the nuclear industry and nuclear power, including the ecology of nuclear power, radiation control, and resource management.[49] Although the pavilion's guides were instructed to adapt their stories, and to include reports on the Party's decisions about increasing the reliability of equipment and the safety of operations at nuclear power plants,[50] the pavilion's general settings proved slow, or altogether resistant, to change. In the report for 1987 any reference to Chernobyl was dropped, and with the exhibitions of 1989 the pavilion's museum activities quietly ended, as did the documentation on them.

Against the backdrop of Chernobyl, the 'models of agency' that the pavilion had developed for its visitors – of enthusiastic spectators and credulous learners – went out of balance. The cognitive imperative to learn about the Soviet Union's nuclear achievements lost its relevance when people wanted to know what had led to the Chernobyl disaster; the moral imperative to support the Soviet polity could only turn into outright cynicism given the scale of the accident and the lack of reliable information about it. The popularizers' credibility had suffered a severe blow. In the face of Chernobyl, they could no longer rely on technical performance – neither as a source of legitimacy, nor as a reason to celebrate and unconditionally support Soviet science and technology (cf. Schmid, 2004).

Conclusions: Handling Failure?

The impulse to celebrate the State, to demonstrate and display technological prowess, along with an emphasis on 'national' distinction, never lost its relevance for the *VDNKh*. The archival material testifies to enormous

leaps in professional sophistication, but the Pavilion for Atomic Energy continued to remain faithful to the world's fair model. And although there was clearly more to world fairs than the celebratory facets that I emphasize here, it is difficult to imagine a self-critical world fair. The Pavilion for Atomic Energy was incapable of including the display of failure, partly because of its being tied up in the larger, deeply modernist *VDNKh* project, and partly because of the fusion of educational, economical, and political objectives characteristic of Soviet state ideology.

Having addressed earlier in this paper some apparent parallels to Western discussions in museum studies and the Public Understanding of Science literature, I now want to stress several distinctive features of the Pavilion for Atomic Energy and the *VDNKh*. First, the pavilion had to deal with a constantly changing, complex, and often overlapping *institutional hierarchy*, while being deprived of rudimentary managerial autonomy. Not only did the pavilion have to negotiate its exhibitions with a variety of partially competing authorities – the main *VDNKh* administration, several ministries, the *GKAE*, publishing houses, export agencies, universities, production firms, scientific research institutes, unions, the censorship agency, and various Party organizations[51] – there was also no clear assignment of responsibility for taking final decisions. At the same time, the *VDNKh*'s general orientation of representing Soviet state ideology remained essentially static.

The problems facing Soviet popularizers of nuclear energy were therefore quite different from those of their colleagues, say, from the Museum of Science and Industry in Chicago, where private companies designed entire sections (cf. Danilov, 1982). At the *VDNKh*, exhibitions were prepared without straightforward conflicts of interest: supposedly the Party, the country, the *VDNKh*, and even the visitors, had one common interest (see my discussion of guest books above) – taking part in the construction of a communist society. Ironically, the lack of transparent structures of accountability might have provided space for the preservation of an enduring technological enthusiasm on the part of the pavilion's staff, which in turn facilitated a possibly unintentional conformity to the official version of Soviet uses of nuclear energy. It was only after Chernobyl that the pavilion's staff began to question this view openly and to consider other options of displaying the blessings and quandaries of nuclear energy. In many ways, Chernobyl shook the faith in modernity, and unlike the nuclear industry itself, nuclear power's celebratory representation did not survive the combination of the most severe accident at a nuclear power plant, a struggling economy, and a political system turned volatile.

A second distinguishing feature of science on display is the Soviet concept of public education. The rhetoric of 'educating and empowering the masses', while in many ways similar to modernist ideas elsewhere, rendered learning and teaching immensely powerful. By diminishing the relevance of aspects such as entertainment or consumption that dominated many Western discussions on science popularization, the Soviet model was both more patronizing and more effective. It is precisely

propaganda in its broader sense that was at work here: by disseminating political ideas through the lens of successful nuclear science and technology, the *VDNKh* specifically aimed to influence the public's consciousness and to mobilize them morally, in order to get them actively enrolled in a common objective.

The visual display of new developments in nuclear science and technology in the pavilion symbolized a successful Soviet industry orchestrated by the Communist Party, and lent the exhibits the status of established knowledge, even though many of these models were still in the planning stage.[52] But if 'the Soviet state and its leaders wanted to draw on science as a powerful *publicly accessible* and *universally valid* rhetorical resource to legitimize their power' (Schmid, 2002: 8), they needed a stage and some kind of *public performance* (Ezrahi, 1990; Hilgartner, 2000). On the pavilion's stage, the boundaries between already adopted innovations and future perspectives, between experience and expectation, were consciously blurred in order to create an image of linear, rapid progress. The nuclear industry represented in the pavilion was by nature scientific and peaceful, and it promised improvements in everyone's life, despite or even because of its technical sophistication.

The pavilion's exhibitions reinforced a vision not only of particular technologies based on the use of nuclear energy, or of the country's scientific and technological potential, but also of a social order. The peaceful atom was displayed in order to create and reinforce confidence based on scientific evidence, and as a consequence a strong common identity. The *VDNKh*'s Pavilion for Atomic Energy was one of the most prominent places warranting this interpretation. In their paper on the 1958 world fair in Brussels, Schroeder-Gudehus & Cloutier (1994: 170) describe the Belgian organizers' directive to display 'what you are', rather than 'what you do' as an attempt to prevent a show-down among the two main Cold Warriors. Like the fair's organizers, the authors interpret the Soviets' response – to exhibit their latest scientific and technological developments – as showing 'what we do', thus violating the directive. I think they are mistaken: 'what we are' in the Soviet case was defined precisely by 'what we do': namely, science and technology, with huge Cyrillic letters (*SSSR*) printed on the artifacts displayed.

Nuclear energy, staged as pivotal to *technical* progress, contributed significantly to the Soviet *political* vision. Ian Welsh refers to the period from the late 1930s to the late 1970s as 'peak modernity', a period 'when the ideological objectives of nation states and the scientific ambitions and aspirations of various constituent sciences were united behind visions of the planned transformation of society by rational, scientific means' (Welsh, 2000: 18). He sees this commitment to 'heroic scientific projects intended to modernise the world' (2000: 18) as fairly universal, encompassing both capitalist and socialist countries. In the Soviet case, however, science and technology were not only invoked as sources of legitimacy, but were considered the foundations of social theory itself: Marxism was considered a science.[53] The pavilion spoke in the name of science and the State, and by

FIGURE 9
A non-specialist visitor at a large-scale model of a BN-600 fast breeder reactor, 1976. Courtesy of the *GAO VVTs*. Although this visitor could in fact be a reactor specialist, her dress as well as her pose – shyly touching a model disclosing the inside of the reactor model – indicates that she is no technical expert. The message conveyed is that even a woman without scientific or technical training could quite literally feel proud in the face of the achievements of Soviet nuclear engineering.

addressing different groups of visitors in skillfully customized ways it emphasized each individual's potential contribution to and responsibility for the communist project. It thus aimed at enrolling all Soviet citizens in a joint politico-technological program.

As I have shown in this paper, the pavilion did not envision a homogeneous type of visitor. Rather, it addressed heterogeneous audiences, different implicit visitors, in sophisticated ways. Of course, the call to implement new technologies was primarily directed toward specialists, and they were awarded medals and diplomas if they were successful. But non-specialist visitors were addressed as well (Figure 9). They were encouraged to feel proud and enthusiastic about being part of a great historical project, and responsible for the construction of a just society. The old claim that science could develop best in a democracy was contested by portraying ingenuity as a character trait specific to the Soviet man. This constituted a strong incentive to identify with the implied socio-technical model – even if the technical information displayed was beyond an individual's grasp. In a sense, then, the exhibition's effect on non-specialist visitors, 'molding' them into Soviet citizens, was potentially even more profound than it was on specialist visitors. While specialist visitors could focus on the cognitive and/or practical imperative, lay visitors had to focus on the moral imperative – or become cynics.

Did the 'disciplining of the visitor's gaze' work? The pavilion's reaction to Chernobyl suggests that it did not. If the exhibitions had been a powerful instrument for shaping public opinion, there would have been no reason for the responsible agencies to discontinue using the pavilion as a nuclear energy museum. Economical crisis cannot be blamed, as the Soviet economy had been in trouble long before the *perestroika* years, and had still considered funding the *VDNKh* worthwhile. But Chernobyl was not the

only problem that became visible as a consequence of *glasnost* (transparency). In her study of regional protest movements under Gorbachev, Glenys Babcock pointed out that 'not even the most cynical Soviet citizens could have imagined the magnitude of environmental problems in the country or the enormous risks taken in the name of progress' (Babcock, 1997: 196).

The *VDNKh*'s Pavilion for Atomic Energy had shown the 'technological fix' to the problems facing the people's economy that science and technology offered, and simultaneously had reinforced the faith in science propelling progress. The administration did not manage to accomplish their maneuver of adjusting the pavilion's identity to the grim new realities of the post-Chernobyl nuclear era. It seems that even during advanced *perestroika*, it was impossible to render uncertainty, controversy, and failure visible at the *VDNKh*. Ironically, but typically for Soviet history (cf. Swidler, 1986; Krementsov, 1997), *crisis* revealed the 'normal': the intended function of the *VDNKh* in general, and the pavilion in particular. This place had been created to show achievements, to impress through the public display of success. Visitors were envisioned as enchanted spectators, as curious spirits whose eagerness to learn was to be stimulated, whose pride of national accomplishment and distinction was to be substantiated, and whose creative participation in the construction of communism was to be enlisted. Which models of agency would a 'problem show' have implied? Perhaps critical minds, skeptical observers, or, to use Yaron Ezrahi's (1990) terminology, attestive observers of transparent decision-making processes? Criticism of science and technology would have been incompatible with the Party's authority, and ultimately with the perceived foundation of the Soviet state itself. Neither the late Gorbachev administration, nor post-Soviet governors of the Russian Federation or Moscow were prepared to assume the respective roles in such a scenario.

And yet, the implied models of agency *have changed* dramatically since the disintegration of the Soviet Union. While in the previous model the State used to be depicted as a caretaker, ensuring that society developed in scientific, logical, and therefore predictable stages, it almost disappeared in the prevailing post-Soviet model of agency, leaving citizens alone in a struggle for survival. The imperative to morally support a larger social vision, the main moral directive back then, has completely vanished from the new model. In spite of that disappearance, beliefs about the State's responsibility to take care of society persist in today's Russia, even when articulated as a desideratum (Kotkin, 2001). In combination with a nearly unshattered faith in technocratic expertise, this reflects a surprisingly enduring confidence in the feasibility of a just polity by rational, scientific means. It also shows the persistence and continuity of modernist beliefs (Welsh, 2000: 17). Exhibitions at the *VDNKh* today either continue along the conventional enlightenment format, which envisions visitors as enthusiasts (but has to allow for potential disinterestedness or cynicism), or they follow a clearly defined consumer model in the tradition of trade fairs,

addressing specific, professional target audiences. In general, today's exhibitions aim at showing and selling, not at enrolling (that is, inspiring, convincing, and mobilizing) their visitors.

So have learners become consumers? Has the market model seamlessly superseded the celebratory model? It is an interesting paradox that during the *VDNKh* days, when visitors were envisioned as active, engaged learners, they were enrolled as committed, creative citizens by the Soviet state, and yet that same State deprived them de facto of the most basic forms of meaningful participation.[54] Today, visitors to the *VDNKh* (or the *VVTs*) are imagined as consumers: they are (almost with ostentation) let believe whatever they want. Learning, knowing, or becoming active in a political sense is considered optional, or even undesirable, behavior. If anything, they are 'enrolled' in celebrating the market and indulging in consumption. It is a bitter irony that due to an inability to spend money, their participation in this model of agency is just as severely limited as in the previous one.

Notes

This paper has had a long history, so I am indebted to numerous people. First, I need to thank my hosts at the *VVTs* in Moscow, Viktor A. Karpochev and Anna V. Margolina in Administration, Svetlana S. Abramova and her colleagues in the archive, and Inna V. Dotsenko and her team in the library. Without their unconditional and enduring support this project would not have succeeded. I am also grateful to other *VVTs* employees who talked to me about their personal memories of the Pavilion for Atomic Energy, but who prefer to stay anonymous, and to my compatriot Eva-Maria Peidlstein, who put me up in her Moscow apartment during my archival research. My department at Cornell, and especially my advisors Michael Dennis, Peter Holquist, and Bruce Lewenstein have been invaluable in suggesting how to improve this paper. I had the opportunity to present earlier stages of this project at the International Summer School 'Microhistory – Microcosms of Knowledge' at the European University in St Petersburg, Russia, in July 2001, at the EASST meeting 'Responsibility under Uncertainty' at the University of York in August 2002, and in Moscow at the Sergei I. Vavilov Institute for the History of Science and Technology, Russian Academy of Sciences (IIET RAN) in October 2002. I am grateful to the attendees of these talks for their insights and challenging comments. Finally, I want to thank Anna Maerker, Brigitte Schroeder-Gudehus, Susan Smith, Charles Thorpe, and Ian Welsh for their help, feedback, and constructive criticism. All new and remaining errors are entirely mine.

1. A note on terminology: I use *exhibition* to refer to a coherent whole that is exhibited (or displayed) at a certain location, for a certain time (*Exhibition* with a capital 'E' sometimes stands for *VDNKh*). An *exhibit* is one part of such an exhibition, an object or a set of objects. *Curator* refers to a person responsible for the conceptual work preceding an exhibition, and the management of ongoing exhibitions. *Exhibitors* are the individuals, institutions, and organizations providing exhibits for an exhibition. All translations from Russian and German are mine, unless otherwise noted. I use the US Library of Congress conventions for transliterating Russian words, except in those instances, where they have entered habitual language use in a different version (for example, Chernobyl, glasnost).
2. In 1992, the 'Exhibition of the Achievements of the People's Economy of the USSR' (*VDNKh SSSR*) was renamed the 'All-Russian Exhibition Center' (*Vserossiiskii Vystavochnyi Tsentr*, *VVTs*). Since the Pavilion for Atomic Energy as such existed only until 1989, I have used the label '*VDNKh*' throughout this paper, except in the archival references, where I use the current acronym.

3. See, for example, Karp & Lavine (1991) and Macdonald (1998a). Note also a renewed interest in and emphasis on 'users' and 'publics' in Science and Technology Studies (Wynne, 1995; Kline & Pinch, 1996; Yearley, 2000; Oudshoorn & Pinch, 2003), and the strong orientation towards readers in contemporary literary studies and the new rhetoric (for example, Nelson et al., 1987; Gross, 1990; Simons, 1990; Selzer, 1993; Gross & Keith, 1997).
4. *Otchet o rabote pavil'ona za 1973 g.* [*Report on the Pavilion's Work in 1973*], RGANTD (Samara) f.127, op.3, t.3, d.5158. I will henceforth refer to these documents as 'reports': they are annual descriptions of the pavilion's activities produced by the pavilion's staff. RGANTD stands for *Rossiiskii gosudarstvennyi arkhiv nauchno-tekhnicheskoi dokumentatsii* [*Russian State Archive for Scientific and Technical Documentation*]. Pre-1974 archival documents pertaining to the history of the VDNK*h* have been transferred to the Samara branch of the RGANTD for reasons of storage capacity. Post-1974 documents are kept at the Archive of the *VVTs* (AVVTs) in Moscow.
5. For an historical account of Soviet fairground architecture, with a focus on the development of national styles, see Castillo (1997).
6. For example *Svetlyi put', General'naia liniia, Svinarka i pastukh* (Noever & MAK, 1994).
7. Anna Kotomina called my attention to Pugacheva's song.
8. Other examples of miniature celebrations of Soviet glory are Moscow's (and St Petersburg's) subway stations; see Jenks (2000) and Neutatz (2001).
9. Compared with Mukhina's earlier sculpture, this might indicate a shift from 'native' to 'professional' identities. I owe this speculative idea to Dmitrii Saprykin.
10. See Beetlestone et al. (1998), Bradburne (1998), Durant (1992), Farmelo & Carding (1997), Karp & Lavine (1991) and Persson (2000).
11. On Frank Oppenheimer's Exploratorium, see Macdonald (1998a: 16) and Barry (1998).
12. All these sources are clearly fragmented: for example, I was not able to look at all documents from before 1974 (which are kept at the RGANTD in Samara).
13. *Postanovlenie SM SSSR i TsK KPSS* No. 452 '*O perestroike raboty VDNKh*' [Decree issued by the USSR Council of Ministers and the Central Committee of the Communist Party of the USSR '*On the Reconstruction of the VDNKh*'], 18 April 1963.
14. I use the word 'actors' not only in a performative sense, but also as a term denoting people involved with the pavilion's activities. However, given the staged character of the pavilion, the dramaturgical allusion is not completely unintended.
15. AVVTs, f.4, op.35, ind.21, ed.khr., l.5.
16. AVVTs f.127, op.4, d.3394.
17. Cf. report 1978, AVVTs f.4, op. 35, ind.20, ed.khr.4, l.2–3.
18. Cf. report 1983 (AVVTs, f.4, op.35, ind.25, ed.khr.3, l.3).
19. Report 1971 (RGANTD [Samara] f.127, op.3, t.1, d.1575).
20. Cf., for example, the 1985 report (AVVTs f.4, op.35, ind.27, ed.khr.3).
21. Reports 1968 (RGANTD [Samara] f.127, op.2, t.4, d.6315) and 1972 (RGANTD [Samara] f.127, op.3, t.2, d.3526).
22. Report 1982 (AVVTs f.4, op.35, ind.24, ed.khr.5, l.20).
23. Reports 1980 (AVVTs f.4, op.35, ind.22, ed.khr.4, l.23), and 1981 (AVVTs f.4, op.35, ind.23, ed.khr.6, l.19).
24. Report 1984 (AVVTs f.4, op.35, ind.26, ed.khr.6, l.11). The State Committee existed until 1986, when after Chernobyl the Soviet nuclear industry's management was reorganized (Sidorenko, 2001).
25. Report 1978 (AVVTs f.4, op.35, ind.20, ed.khr.4, l.7).
26. Report 1980 (AVVTs f.4, op.35, ind.22, ed.khr.4, l.13–14).
27. Report 1983 (AVVTs f.4, op.35, ind.25, ed.khr.3, l.14).
28. Report 1980 (AVVTs f.4, op.35, ind.22, ed.khr.4, l.21).
29. Report 1981 (AVVTs f.4, op.35, ind.23, ed.khr.6, l.3).
30. Report 1982 (AVVTs f.4, op.35, ind.24, ed.khr.5, l.18).

31. Cf. on 1960, RGANTD (Samara) f.127, op.1, t.2, d.1627.
32. Report 1981 (AVVTs f.4, op.35, ind.23, ed.khr.6, l.19).
33. *VDNKh SSSR, Pavil'on 'Atomnaia Energiia', Kniga otzyvov i predlozhenii posetitelei pavil'ona,* AVVTs f.4, op.35, op.22, ed.khr.15.
34. Report 1985 (AVVTs f.4, op.35, ind.27, ed.khr.7, l.18).
35. Report 1968 (RGANTD [Samara] f.127, op.2, t.4, d.6315).
36. Report 1980, AVVTs f.4, op.35, ind.22, ed.khr.4, l.3.
37. Unfortunately, I do not have comparative data for other pavilions, nor have I been able to identify criteria for how these prizes were awarded.
38. Report 1984 (AVVTs f.4, op.35, ind.26, ed.khr.6, l.23).
39. For concepts of learning in museums developed in Western contexts, see especially Hein (1988) and Hein & Alexander (1998).
40. Report 1968 (RGANTD [Samara] f.127, op.2, t.4, d.6315); see also Tikhanov (1957: 3) and Petrunia (1973: 3–4).
41. Today, the Polytechnic museum has the only publicly accessible permanent exhibition on nuclear energy in Moscow that I am aware of. Nuclear energy is part of a hall devoted to energy production, and features a number of models. There is also a high-quality exhibition administered by the Division of Exhibitions and Marketing (*Vystavochno-marketingovyi otdel*) within the Federal Agency for Nuclear Energy (the former Ministry for Atomic Energy, *MinAtom*. I am grateful to Galina V. Gorshtein for introducing me to this exhibition in the summer of 2004).
42. Report 1971 (RGANTD [Samara] f.127, op.3, t.1, d.1575, l.1).
43. Report 1966 (RGANTD [Samara] f.127, op.2, t.2, d.2752).
44. Report 1966 (RGANTD [Samara] f.127, op.2, t.2, d.2752, l.15).
45. Report 1976 (AVVTs f.127, op.4, ed.khr.1707, l.4).
46. Report 1987 (AVVTs f.4, op.35, ind.29, ed.khr.9, l.10).
47. Report 1986 (AVVTs f.4, op.35, ind.28, ed.khr.3, l.14).
48. Personal communication with a former guide and curator, Moscow, January 2001.
49. Report 1986 (AVVTs f.4, op.35, ind.28, ed.khr.3, l.25).
50. Report 1987 (AVVTs f.4, op.35, ind.29, ed.khr.9, l.9).
51. This phenomenon has been thoroughly described for Western contexts (Schroeder-Gudehus, 1978; Schroeder-Gudehus & Rasmussen, 1992; Schroeder-Gudehus et al., 1993; Lewenstein, 1996; Molella, 1997, 1999; Gieryn, 1998).
52. See report 1980 (AVVTs f.4, op.35, ind.22, ed.khr.4, l.2) and Biagioli (1990).
53. For post-Stalinist struggles between scientists and Marxist philosophers over the authority to define what 'science' was or should be in a socialist society, see Ivanov (2002).
54. I am indebted to Charles Thorpe for emphasizing that the very idea of a workers' democracy clashed with the reality of the authoritarian, bureaucratic Soviet state.

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