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FROM THE OFFICERS

The Stanford U.S.-Russia Forum (SURF) was founded by two Russian and two American students in the fall of 2008. The founders, Vladislav Malashenko, David Zokhrabyan, Anda Ganska and Sam Stone, believed that students between the two countries had much to learn from each other and also much to bring to the table when it came to innovative approaches to U.S.-Russia policy. The result was the first SURF conference, a one-day event in Moscow in November 2008. The first full year of the SURF program ran from October 2009 to April 2010 as a series of web seminars, an extended research project and a conference at Stanford.

The second full year of the Stanford U.S.-Russia Forum has seen the program expand rapidly, with the first year's alumni swelling the ranks of the officer team to nearly twice its original size and helping recruit an incredibly diverse and talented cohort of delegates for the program. This year's program began in October 2010 with a conference in Moscow. At the conference, the delegates had the chance to learn about each other and form research groups composed of two Russian and two American students. For the next six months, these groups tackled some of the most difficult and interesting problems in U.S.-Russia relations, with the help of student officers from both countries as well as academic and professional affiliates to advise them. In April 2011, they presented the results of their research in policy proposals at Stanford University.

We are extremely proud to publish their work in the second volume of the Stanford U.S.-Russia Forum Journal. Our conferences and projects have started conversations, generated ideas and made intimate collaborators and friends of distant students. Over the past two and a half years, we have learned that collaboration between our two countries is not only possible but extremely rewarding. The vision of SURF's founders was that this experience would train the future leaders of both countries to ease U.S.-Russian tension and strengthen its tenuous relationship. We sincerely hope that this vision for our two countries as partners will arrive in part because of the work our alumni have helped complete.

We could not have done this without outside assistance. While it would be impossible to list all of those whose support has been indispensable, we would like to thank all of our sponsors as well as the many who have spoken at our conferences, aided our research teams and lent a helping hand. We are extremely grateful to everyone for their support and we hope you will stay with our organization for years to come.

And of course, to our delegates, who have spent many hours meeting on Skype, re-writing endless drafts and rising to the challenge of completing this work--congratulations!

-The SURF Officer Team

FOREWORD

The 'reset' was a remarkable breakthrough in the history of U.S.-Russia relations, opening up new opportunities for cooperation between the two countries. It is important that the U.S.-Russia rapprochement at the political level has been supported by grassroots initiatives, such as the Stanford U.S.-Russia Forum (SURF). This project was established by enthusiastic American and Russian students, and welcomed by both countries' academic and research centers and political leaders.

SURF allows students to broaden their knowledge of international relations and obtain a valuable life experience. Since 2008, it has organized annual international youth conferences in Moscow and at Stanford and has encouraged young specialists to conduct research on different issues pertaining to the development of US-Russia relations.

I'm really proud to present to you a compendium of research papers, prepared by the participants of the Second SURF Exchange Program during the winter of 2010-2011. It is the result of the hard work of more than 80 people from a dozen American and Russian universities and companies. The articles analyze various political, economic and social problems of high importance not only for the US and Russia, but also for the whole of the international community.

The subjects of this volume of The SURF Journal include the possibilities for U.S.-Russia cooperation on the Skolkovo project, a promising strategy of the development of Russia's Far East, a comprehensive study of arising cyber security threats, a comparison of political and economic problems facing Afghanistan and Russia's North Caucasus region, and a number of other brilliant pieces.

Conducting their research, students have extensively communicated with experts in their respective fields of study, worked with both qualitative and quantitative data, and have carefully edited their papers to ensure that they are informative, precise and contain practical recommendations. The journal is worthwhile and useful reading for academics, government officials and all those who have an interest in the ongoing developments in U.S.-Russia relations.

The SURF Journal is a sign of SURF evolving into an international youth think tank, which is a new and innovative form of collaboration among talented students. In contemporary conditions, in order to preserve the sustainable development of the world, it is critically important to give young people an opportunity to speak and listen to their ideas, thus building a bridge to the future.

-Dr. Anatoly Torkunov, Rector of the Moscow State Institute of International Relations (MGIMO-University) under the Ministry for Foreign Affairs of the Russian Federation, SURF Advisory Board Member

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Changing Political Discourse: A Case Study of Public Response to Obama and Medvedev's Use of New Media

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Introduction: A Changing Political Discourse

In recent years, the importance of the Internet to the daily lives of people around the globe has been rising. More and more people neglect traditional media, opting instead to get news from the Internet[1], including from social networking sites such as Facebook, Livejournal, and Twitter. Collectively, these sites are referred to as "new media" and the interactivity, networking opportunities and speedy user feedback options that they offer are changing the way the society receives and processes news. This dramatic yet tangible change is what motivates the present research. Given the digitalization trends of the time, new media is likely to only grow both in size and significance over the next several years. The idea for this study grew out of the recognition that new media has the potential to play an increasingly important role at the intersection of politics and public opinion in today's world.

The objective of the study is to take a look through the eyes of today's young tech-savvy generation at the current political rhetoric and explore how the Russian and American governments present themselves. This focus restricts the analysis to new media as an outlet for the governments' rhetoric and a hub for citizen responses. When looking at governmental rhetoric, the research focuses on the rhetoric of the presidents of each country, Dmitry Medvedev and Barack Obama, while the focal point for citizen response analysis is the citizens who are active online, either through blogging or through social networking sites.

The seemingly vast scope of research and analysis puts forward relatively specific questions. How do Presidents Obama and Medvedev communicate with citizens through new media? What types of rhetoric are effective at generating user responses? What policy recommendations can be made regarding the use of new media? The answers to these questions are what have driven this research and what reflect the value of the final product.

The scholarly literature on new media is wide-ranging, yet little research has been done on new media in the context of Russian politics. Moreover, the comparisons between Russian and American new media politics, for the most part, have not been studied at all. This lack of prior research leaves no doubt of the project's novelty.

The study we have conducted has practical implications for the policies the presidents pursue in their online political communication. We base our research on the conception of deliberative democracy, that is, we hold that communicative action is necessary for democracy[2]. Our study makes an assumption that if an issue is widely discussed, the citizens are, firstly, more aware of the issue, and secondly, more likely to make an informed choice about it. Having an ample understanding of popular issues in the media makes citizens' political engagement with it more likely. Therefore, should the government want to have its citizens make informed decisions and take an active role in leading these government-envisioned changes, it should take legitimate efforts to foster public discussion of

the matters it considers to be important in a particular field.

The issues raised by the presidents in new media are assumed to be the issues the government intends to communicate to the wider public, thereby putting them on the public agenda, engendering more diverse discussion of them. By finding out which issues citizens most actively respond to, we can estimate how effectively the government can get its message across and mobilize the population to achieve its goals. By identifying the new media outlets and rhetorical techniques that are best suited to such transmission of messages, we can suggest ways for the government to convey important messages more effectively.

Literature Review: How "New" is New Media?

The aforementioned lack of extensive previous research on the topic makes finding other studies that could serve as models for a comparative analysis of new media use difficult. In this respect, secondary sources were most useful for the research, not for specific case studies, but rather in providing general models of political interaction in the new media sphere. These models were then applied to real life cases of Medvedev and Obama's use of new media to evaluate their relevance and results. Yet an overall look at how the definition of new media and the theoretical approach to it have been developing gives much insight into the significance of the topic.

New media, as made blatantly obvious by its name, is a new phenomenon, arising less than a decade before this study and only gaining the influence it holds today over the last few years. When new media was first recognized as a global phenomenon, scholars were quick to classify it as pertaining to the same type as all other forms of public expression that were non-virtual. Following this logic, the first academic models of new media as a political force drew almost exclusively on the works of Habermas. Being one of the most influential contemporary philosophers, Jürgen Habermas has combined politics and communication – the two linchpins of his philosophic works – and developed a theory of the "public sphere", which he defines as "a domain of social life in which public opinion is expressed by means of rational public discourse and debate."[3]

While the public sphere was originally the predominant paradigm for theories about new media interaction, recently many scholars have questioned its relevance and applicability to the virtual world.[4] A good deal of the latest scholarly work on new media critiques the model of the public sphere and seeks to create new models that represent new media more accurately. Some sources even go so far as to advocate that Jeremy Bentham's "Panopticon"— which may be seen as a kind of dystopian and twisted version of the public sphere — is a better model for new media.[5] While Bentham theorized the panopticon as a specially designed prison that would keep inmates well behaved and orderly by placing them under constant scrutiny by prison guards and each other, it is now a general symbol of any society where privacy has ceased to exist and constant scrutiny rules all social dynamics. This model of new media postulates a private sphere that has been artificially forced to become public. The rationality and objectivity of Habermas' model is replaced by paranoia (exploited by sites like Wikileaks) and subjectivity (reflected in the very structure of a Facebook status update).

Other scholars, most notably Ziza Papacharissi of the University of Illinois, have used a middle ground approach, creating an entirely new model for the new media sphere that takes into account the criticisms of Habermas' theory but does not go so far as to suggest that new media can be fully represented by Bentham's panopticon. While the traditional public sphere is characterized by objectivity, Papacharissi and others argue that the highly personalized content of, and individual interaction with new media proves Habermas' model wrong.[6] A major implication of the personalized nature of the new media sphere is that it is not a distinct and separate space reserved for objective discourse. Unlike the public sphere, the new media sphere mixes readily with commercialized space (e.g. internet ads) and with work and family life (e.g. employers use of Facebook and other sites to track down information on their employees).[7]

All of these sources point to one conclusion: Internet identity, interaction, and politics are not the same as traditional means of political interaction. The new media sphere and new media politics are different from traditional political spheres. Many scholars have specifically identified the personal element in new media politics as a unique characteristic that separates new media from other spheres. While new media is a multifaceted phenomenon, and may have a number of features that merit exploration in further studies, the group, taking the theoretical framework outlined above into account, focused specifically on the personal aspect of new media politics for both Medvedev

and Obama.

Methodology

The aim of our study was to conduct an analysis of the rhetorical techniques employed by the presidents of the US and Russia in the new media and find out which of the techniques are most effective at eliciting public response in each country. The primary means we use to evaluate the impact of the techniques are the number of comments and "likes" a particular presidential post receives, with the posts eliciting more responses being thought of as more successful at engaging the public.

When selecting new media sites for analysis we have chosen Facebook for the US and Livejournal and Twitter for Russia. Our choice was determined by the fact that these social networking sites are some of the most frequently used in the respective countries[8] and the presidents of the countries have accounts on these sites and use them regularly. Obama and Organizing for America (now a section of the Democratic National Committee but originating as Obama for America) maintain the Obama Facebook and Twitter, among other social media networks. Medvedev has a Livejournal account and two Twitter accounts.

The study proceeded by addressing three broad areas. We first looked at the use of inclusive communication in the presidents' posts and tried to find out whether it fosters public discussion. Under inclusive communication we understand the use of the personal pronouns "we", "our", and "us" that have been described as inclusive in a number of studies[9], as well as the use of the personal pronoun "you", because they refer either to the speaker and the audience or the audience alone, thereby including the audience in the utterance and creating bonds between the speaker and the audience and between the members of the audience itself.

In order to compare the use of inclusive pronouns we needed to assess public response by the means of counting comments and "likes". This is only possible in Facebook and Livejournal, since Twitter does not have the "comments" feature, and its "retweet" feature does not show the number of retweets if it is higher than 100 (which is almost always the case with the presidents' accounts). It is not possible to use one new media site for this comparison, since Medvedev has no Facebook account, and Obama has no Livejournal account. We, therefore, conducted the comparison by focusing on Facebook for Obama's posts and on Livejournal for Medvedev's posts. While they both have different features, they are representative of the president's communication with constituents and provide an online forum for commentary and debate.

To help the comparison we broke down the posts made by the presidents on Facebook and Livejournal within a specific timeframe by topic, type of rhetoric and response. We then turned to the idea put forward by the scholars of new media and democracy that the personal is becoming increasingly entangled in the online public sphere[10] and assessed the impact of this development on the public discussion. In order to do this, we first needed to distinguish between personal and impersonal discourse. While the boundary between these two concepts has been and remains fluid, the recurrent themes in conceptualizations of these concepts have conflated the personal sphere with the private sphere and the impersonal with the political, the public sphere where the management of common affairs is decided.[11] For research purposes we defined the private as the sphere that has to do with individual matters as opposed to the collective. The public sphere, in contrast, has to do with managing the common affairs of the state or, more specifically, with the execution of the responsibilities attached to the president's office.

Having done that, we proceeded to find out which discoursive strategy generates more public response – the one that belongs entirely to the public realm or the one that is partly or wholly personal. For the comparison, as almost none of Medvedev's posts in Livejournal are personal, we used Medvedev's two Twitter accounts. In order to assess Obama's use of the personal, we classified his Facebook posts as either personal or political according to the subject matter and evaluated the number of comments each category received. By carrying out this evaluation we were able to find out whether the mix of the personal and the political can promote political engagement of the public. Lastly, we examined the content and phrasing of the presidents' posts to see whether we could identify any other rhetorical attributes that appeared to influence public response.

Current Challenges: Obama's Use of New Media

It has to be noted that President Obama's use of new media is more extensive than that of President Medvedev. The American President covers a much wider range of topics than his Russian counterpart,

yet there seem to be certain areas where Obama also encounters challenges.

First, the wording Obama uses in many of his posts in new media seems to be rather impersonal. This has serious policy implications since our research has shown that impersonal posts elicit less citizen response than personal posts. We have classified Obama's Facebook posts in November 2010 as either being personal or not and then compared the average number of comments each category of the posts received. The posts that fell into the category of the personal dealt with Obama's congratulating others on holidays, Obama's celebrating Thanksgiving or posted photos. The personal posts (10 total) received 16427 comments on average while other posts received 12167 comments on average. We see that the personal posts have received more comments, which indicates a high interest towards the personal elements in Obama's discourse. Another point that has to be stressed is that the sheer number of Obama's posts diminishes their capacity to produce a strong public reaction. For instance, the election-related posts we encountered during our research duplicated each other, producing little impact and making no use of the new media advantages. This observation can translate into a recommendation to better select the issues on which to post, that will eventually lead to the desired public response.

A serious obstacle to Obama's use of new media becoming more effective is the fact that he underutilizes inclusive pronouns in his posts. We have classified Obama's posts on Facebook (83 total, November 2010) and Medvedev's posts in Livejournal (109 total, November 2009 – January 2011) into categories based on the personal pronoun employed (I, we, you, third person pronouns and the versions of those – e.g. my, our, etc). Often in Obama's posts more than one type of pronoun was used. In this case the posts were counted as falling simultaneously in different categories. First we compared the number of posts in each category. While Obama's posts were relatively evenly distributed across categories (12, 28, 24, 33 and 2 posts for "I", "We", "Third person", "You" and "No personal pronoun used" categories respectively), for Medvedev's posts the distribution was more uneven (4, 11, 1, 2, 91 posts for the same categories). We see that Obama uses more personal pronouns in general and, in particular, more inclusive personal pronouns than Medvedev.

Then we calculated the average number of comments each category of the posts received. For Obama the results were as follows. The posts using "we" received most comments (60246), followed by the posts using "you" (47057). The posts using third person pronouns and first person pronouns received 38031 and 33005 comments respectively. The posts that contained no personal pronouns received by far the least number of comments (6486). We see that the using inclusive pronouns "we" and "you" received most responses. Seeing how using inclusive pronouns is likely to elicit more citizen response, it is only appropriate that Obama utilizes more inclusive pronouns in his posts.

Finally, a challenge that has to do with current digitalization trends is that many of Obama's posts lack visual material. Our research has shown that the posts that linked the users to pictures or videos were better received, which demonstrates that being more visual is likely to substantially enhance the effectiveness of Obama's use of new media.

New media, therefore, is most effectively used when its capacity to mix the personal with the impersonal is taken advantage of, rather than when it is used for the sole purpose of information transmission. Obama's use of new media, while sometimes expressing a mix of both, does not regularly join together the personal and political.

Current Challenges: Medvedev's Use of New Media

The use of new media by the Russian President is a rather new trend, so, quite logically, there are certain areas where problems arise. First and foremost, the analysis leads us to believe that the statements generating the most public response are the ones that can be construed as forming a part of a dialogue. This conclusion can be supported by an example from our research. We analyzed two posts from Medvedev's Livejournal that were similar in content but differed in the way they were titled. A post about ecological economy in Medvedev's Livejournal, that received more comments, was phrased as a reply in a dialogue, as an attempt to disprove an opposing point of view which holds that growth of economy and protecting the environment are mutually contradictory goals, and coined a new phrase – "ecological economy". The post about green growth, which received fewer comments, did not so that.

Our suggestion is that this is happening because, if the citizens see that the president is responding to the criticism directed at his plans in a particular

area, they are more likely to believe their comments will be read by the president, taken into account and maybe even responded to by him. Thus the challenge for the Medvedev administration is to concentrate on the specific wording of the posts. If citizens are most likely to respond to the posts titled in a certain manner and with certain content, ensuring that the posts are titled this way and the content is appropriate will draw more public attention to the posts.

As our research has shown, Medvedev, even more so than Obama, underutilizes personal pronouns in his online communication. The correlation between the use of inclusive pronouns and the number of responses to Medvedev's posts was more difficult to test as most of the posts use no personal pronouns, and we had to make statistical inferences from a small number of posts.

The post using a third person pronoun received most comments on average (777). However, since there is only one post in this category, no credible statistical inference can be made. The posts with "I" have received the second highest number of comments (741), followed by the posts using second person pronouns (458). The posts using no personal pronoun have received 349 comments, while the posts using "we" have received slightly fewer – 336 – comments.

As the results demonstrate, the correlation of the use of inclusive pronouns with the number of comments holds only partly for Russia, and where it holds (for the use of the pronoun "you") it is weaker than in the US. The possible reason for the correlation not holding in Russia for the use of "we" could be the historical connotations attached to the pronoun. In tsarist times this was the pronoun typically used by the royalty to refer to themselves. The historical usage of the pronoun may be the factor that dims its inclusiveness.

Another thing to mention, which is a peculiarity rather than a challenge, is that there is much more public discussion of an issue if specific steps concerning the issue are being taken in the real life, as opposed to the issue just being mentioned in the media. Therefore, to engender more public discussion of particular problems government needs to take specific, widely publicized measures aimed at tackling these problems.

Looking at Medvedev's Twitter use, it has to be pointed out that a mere stream of official information has much less response-creating power than a personal post. This can be illustrated through Medvedev's use of official and personal Twitter accounts. The first account Medvedev created on Twitter in June 2010 was called KremlinRussia. This account featured posts with both official announcements and personal information. In November 2010 Medvedev added a second Twitter account to the one he already had. The original Twitter account was renamed into MedvedevRussia and was intended for communicating personal news, while the new one was named KremlinRussia and was to be used for official announcements. On 6 December 2010 MedvedevRussia had 356 tweets and 138468 followers, while KremlinRussia had 50 tweets and 7827 followers.

The number of followers of MedvedevRussia is higher than the number of followers of KremlinRussia, their ratio being 17.69. The number of tweets on MedvedevRussia is also higher than the number of tweets on KremlinRussia, the ratio being 7.12. While the difference in the number of followers and tweets can be attributed to the fact that one account has existed for a longer time than the other, the difference in average number of comments per tweet (388.96 vs. 156.54) shows that the popularity of the second, official account is more than twice lower than the popularity of the informal account. This allows us to conclude that people are highly interested in the personal information the president can communicate by Twitter., which may be caused by the fact that official news are available from sources other than Twitter, while personal information is not always readily at hand.

Lastly, but quite importantly, a serious challenge that Medvedev is facing in his new media use is an astonishing number of 'fake' accounts that seem to be the most direct and witty outlet for criticism. All of them try to show us just how one-sided the presentation of information in the president's Twitter account is. They showcase the excessive optimism, pompousness and solemnity contained in the posts, attacking Medvedev's online rhetoric. They attempt to demonstrate how Medvedev is trying to come across in his posts as both a confident leader and a human being people can relate to and failing. Thus, the Twitter posts critique Medvedev's person as a way of critiquing his politics, constructing their own alternative image of Medvedev as a person exhibiting such very human characteristics as a propensity to swear. As this image is easier to relate to than the original one, it implies that Medvedev is not really being sincere enough in his posts.

Policy Proposals: New Media as a Tool to Improve Government-Citizen Interaction

A few especially salient themes emerged in the course of the research, which lead us to produce a set of policy recommendations on effective new

media use in political communication. The following recommendations are based on the findings of the research, as well as the theoretical background we have examined. However, not all recommendations can be regarded as 'blanket decisions' or 'universal remedies'. It has to be stressed that circumstance-based, issue-oriented communication is needed. Yet there are certain general points we would like to emphasize to help politicians both in Russia and America better connect with their constituencies and open up new lines of dialogue between the people and the governments of the two countries.

First, we found that the personal element is an especially unprecedented and key part of new media spheres, as predicted by theoretical models of new media and shown to be true in the public response to Medvedev and Obama's online personas. The assumption that has been made prior to the research, that new media is more than a new means of information transmission, seems to have proved valid in this respect. Speed and coverage of the news and other informational outlets are only partially responsible for new media being as significant as it currently is. What magnifies the effect of new media and adds to its opinion-shaping power is the opportunity it provides for "first person" politics. In other words, the social networking sites used by both Medvedev and Obama give them a chance to add a personal undertone to their political statements. Following this logic, a policy recommendation is to avoid impersonal statements. This does not mean switching the register from formal to informal, but rather using first person statements to show the citizens that a country's president is also a country's citizen and not just a team of well-trained spin doctors. Believing that the words come from the president himself, and not one of his aides, adds legitimacy to the use of social media and helps citizens develop a deeper trust in their leader.

Second, we also found that the more contentious issues and more strongly worded, opinionated posts generated more public response. While this phenomenon may be true of traditional politics it is both highly relevant and, possibly, more pronounced in the virtual sphere. This conclusion also serves to prove that Habermas' definition of "public sphere" as objective is inapplicable to the new media. Quite the contrary, new media outlets encourage subjectivity. This leads us to recommend that adding at least some opinion to a political statement can produce a greater public response and thus draw more citizens to interact with the government. Therefore, if Medvedev or Obama wants to draw public attention to a certain political or social matter, they should word their online statements to convey their own take on the matter and avoid vagueness and impersonality.

Third, we found that posts relating to high-profile projects that were already the subject of public discussion tended to be most successful in the online sphere. This last point may suggest that new media is most helpful as a supplement to the existing political debate, and not necessarily as a method of introducing new ideas. It seems logical to regard a country's people as a whole without drawing a strict distinction between the Internet users and the citizens who are less prone to online participation. In this regard, we recommend using new media to expand and elaborate the statements that have already been made and the topics that have already been brought up. This use should not translate into a mere repetition and reproduction of the information pertaining to Medvedev's and Obama's political statements, but rather the representation of the presidents' political personas should be the result of a synergetic effect of combined media usage and add a personal dimension to the discussion.

These proposals should not be regarded as a simple three step guideline to successful new media use. Each and every one of them cannot be treated as a blanket solution and has to be specifically tailored to the country's political situation and the political persona being represented. What it does mean, however, is that these easily implementable solutions – use of inclusive pronouns, adding personal opinion, taking advantage of the interactivity new media offers to discuss the already familiar issues – can start politicians off on their way to use new media more effectively. Efficient and clear use of these new media tools can form new lines of communication between the state and those who may have felt alienated and ignored before. Interacting with citizens in their sphere, in their environment, gives politicians unprecedented access to people who otherwise would choose to remain disengaged.

Even if it is an imperfect tool for political expression, new media's presence must be acknowledged and actively engaged by the political elite. Both Obama and Medvedev have access to an unprecedented audience of political supporters and detractors, and should encourage political participation online through any means necessary.

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Creating an Innovation-Friendly Environment in Russia: Recommendations for the Skolkovo Foundation

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Introduction

A few decades ago, the global economic race focused on industrialization. Today, the race is for innovation. The United States, Israel, and China have famously succeeded in fostering successful technological clusters that generate immense revenue, develop new patents and create new start-up businesses. Russia is on the verge of entering this race for innovation with the hopes of achieving similar success with its development of the Skolkovo Foundation. In this paper, we briefly outline the Skolkovo essentials; we then look into the experiences of other countries and evaluate their relevance to the Russian model; and finally, we introduce our own ideas on strategies to make Skolkovo more appealing to innovators and how to fully exploit its envisioned potential.

General Background of Skolkovo Project

Skolkovo is expected to become Russia's harbor of innovation, analogous to that of the Silicon Valley in California . As William Weldon, chairman of Johnson & Johnson, asserts, "Innovation is no longer about money, it's about the climate: are individuals allowed to flourish and take risks?" In this vein, the purpose of Skolkovo's creation is to encourage entrepreneurship and innovation within Russia by attracting professionals and up-and-coming scientists from the international community to partake in an environment where their talents can flourish. The Skolkovo Foundation will be comprised of five separate clusters each with unique focuses including energy, information technology (IT), biology, nuclear development and space exploration . The Skolkovo Institute of Technology (SIT) is the heart of the Skolkovo center, serving as a stepping-stone into its competitive and marketable innovative environment.

The Russian government's loyal support of the Foundation's development is paramount to its success. However, the project itself will be supervised by an independent board of directors and all buildings will be built by private developers. In addition to these measures, there are several outside organizations including Siemens, Google, Cisco and Boeing that are heavily involved in the project's advancement and in its oversight.

Because Skolkovo is being developed in an emerging economy and a developing country, an incentive structure was carefully considered to help attract new companies, scientists, venture capitalists and innovators. For instance, the companies that are involved are not required to open branches of their offices on Skolkovo's territory according to the extraterritoriality rule, which mandates the required registration in the Foundation. Additionally, the residents of Skolkovo will be able to enjoy a range of tax incentives including exemption from the VAT tax for up to 10 years, income tax breaks, and refunds on import duties . This broad incentive program that includes programming, utilities and resource access will be examined in further detail later in this recommendation.

Lessons from Other Countries

As previously discussed, Russia is not the first country to pursue a technology and innovation cluster

within its borders. Having the experiences of these other countries as examples will benefit the Russian iteration, because it provides an opportunity to analyze the successes and failures of these countries and avoid large-scale errors . Our analysis has produced the following recommendations:

1) Give priority to Russian experts. Over the past three decades, Russia has experienced severe brain drain. Many of its most gifted scientists and researchers have emigrated to pursue more attractive opportunities abroad. The Skolkovo Foundation aims to attract these Russian experts to Skolkovo by offering material incentive; additionally, they hope that these experts will also be drawn by their cultural ties, as was the case in Taiwan . Equipped with the more liberal Western business practices and a strong grasp of the Russian language, these experts can be a great asset to the Skolkovo Project, (especially as visiting professors at SIT). Russian émigrés have a significant presence in Silicon Valley and the technology cluster in Israel, the two most successful and renowned "Valleys," and it is important to have these talented innovators produce and develop within Russia.

2) Set up realistic goals. The Russian mentality and ambitious projects have reflected its focuses on "dreaming big," but overextending itself is inefficient and does not produce sustainable results; the Skolkovo Project must follow a more rational down-to-earth approach. The message conveyed to target audiences about Skolkovo needs to be grounded in reality. The edginess of the message should not lie in exaggeration but in effective presentation.

3) Create cheap residential opportunities. Moscow is notorious for its elevated rent and high real estate costs. Constructing a village in Skolkovo will provide affordable long-term and short-term accommodations for permanent residents and for those that are not permanent workers or researchers at the Foundation, respectively. Cheap and available accommodation was crucial to the creation of the Silicon Roundabout in London. The same concept was used in creating the Strelka Institute of Media, Architecture and Design : its students are provided with free accommodation in apartments in the city center. Currently, the Skolkovo foundation has only published plans for providing office space. It should strongly consider developing residential spaces as well.

4) Provide start-ups with access to consulting services. In the case of London's Silicon Roundabout, McKinsey & Co brings management consulting expertise to fledgling businesses . The new businesses at Skolkovo should have similar access to consulting services. The foundation already has top consulting firms working on the project including Booz Allen Hamilton, McKinsey & Co and Roland Berger. The Skolkovo Foundation can extend relationships with these firms to contract their services for the start-up businesses in Skolkovo. The services of the Boston Consulting Group can be solicited as well, because the firm has an extensive history of success in government consulting (including the Russian government).

5) Market stories of success. Disseminating stories of successes provides the best support to entrepreneurs, because it promotes confidence in the technology hub, secures the trust of investors and attracts new participants and attention. Technology centers in Israel, the UK, continental Europe and Silicon Valley have used success stories to shape investors' expectations and to help promote the innovation clusters because these stories legitimize the centers in investor's eyes . Success stories already exist in Russia, but they are insufficiently promoted; it would be beneficial to spread these stories to international media outlets for promotional purposes.

6) Provide cheap (subsidized) loans to start-ups. Providing subsidized loans to start-ups was a part of Michael Bloomberg's ambitious plan to create a Silicon Valley in New York . This approach should be applied to Skolkovo because Russia's high average interest rates, published in the Central Bank's monthly reports, create a depressing outlook for domestic loans and financing. The solution could be to provide these subsidized loans through a non-banking financial company, perhaps a spin-off of the Skolkovo Foundation. It should be emphasized that because investments and credit are radically different sources of financing, these two options are not mutually exclusive.

7) Create an open and unified networking space accessible to innovators/start-uppers. Aliona Popova, a well-known consultant for start-ups, Skolkovo needs a "single point of entry." We imagine it to be an online social networking platform that brings experts, students and entrepreneurs together to spark creativity through open communication and real-time updating. The social network will include other valuable online "at your fingertips" resources as well.

8) Host international conferences and scientific/ technological seminars. There are many benefits from hosting technology conferences, including opportunities to promote and to network. Events such as LeWeb in Paris and Digital-Life-Design in Munich

have had much success in bringing together scientists, entrepreneurs and investors in an environment to discuss new ideas and to develop valuable partnerships.

9) Incentivize indirect investment. Europe provides multiple programs that inject public money into venture capital. The European Investment Bank and the EU jointly own the European Investment Fund, a "fund of funds" that invests money into other venture and loan guaranteeing funds. By the end of 2009, the Fund had invested €4.1 billion into these funds rather than directly into start-ups. In addition to these increased investments, some national governments have been even more generous. In France, for example, citizens are eligible for tax breaks if they invest in VC funds or directly in start-ups. They can cut their wealth tax by up to 75% if they invest an equivalent amount. As a result, nearly €2 billion was raised in 2009. Similar incentives would work in Russia as well.

10) Link education to the business world. Roughly 85% of all high-growth businesses created in the United States in the past 20 years were launched by college graduates. University research departments have helped to drive innovation in fields ranging from product design to entertainment. But this is not yet the case in Russia. If Skolkovo is aiming at bridging ideas with businesses and helping to commercialize inventions, then it must develop a practice-orientated curriculum at the Skolkovo Institute of Technology.

11) Develop a new policy on depreciation. In 2009, depreciation accounted for just 18.7% of investment in fixed capital in Russia . In the USA, the same figure was well above 70% (74.2%), and similar levels are found in other developed countries. As a source of investment, it is much cheaper than profit/equity, debt or financing by an institutional investor, and it is more efficient (on average, the IRR of depreciation is two times greater than that of net income and four times greater than that of a bank loan). It allows for lower sale prices and consequently increases competition. However, in Russia, depreciation is a mechanism usually used as a source of financial investment, while its original purpose is non-financial investment; moreover, there is no strict control of the way these resources are allocated. Mikhail Sokolov of the Russian Academy of Sciences believes that this is one of the key problems of innovation and modernization in Russia, and he suggests implementing a new, 'aggressive' policy on depreciation. While this may seem not very relevant to the Skolkovo Foundation, we believe that the point still stands and should be taken into account. Whether it takes the form of trying to adopt this policy solely on the Skolkovo level, or lobbying for a law on the federal level, it does seem to be one of the secrets of success for western companies.

SWOT-analysis of Skolkovo

Prior to our specific recommendations a brief SWOT-analysis will demonstrate the elements that Skolkovo already has to offer and which gaps are left to fill. Our propositions aim to address the opportunities and threats of Skolkovo (the third and fourth quadrants) in the light of its strengths and weaknesses (the first and second quadrants).

Strengths
•Financial resources
•Government support
•Partnership agreements
•High domestic awareness
•Own affiliated research university (planned)

Weaknesses
•Time constraints
•Lack of confidence and trust in the project
•No results at present
•Low overseas awareness
•Unclear organizational aspects (in the process of development)

Opportunities
•Creation of a competitive scientific community
•Development of strong and competitive global brand
•Potential to create an influx of gifted scientists (including those from abroad)

Threats
•Failure to create an innovation-conducive environment
•Failure to successfully commercialize products
•Failure to attract top researchers and scientists and/or young talents
•Threat of becoming a "launching platform" for emigrating scientists

Recommendations for Skolkovo Foundation

Marketing the Skolkovo Project

Marketing the products and services of Skolkovo will be integral in both creating and sustaining its success. The Skolkovo Foundation will offer a wide variety of options to both young innovators and entrepreneurs from around the globe. The key, however, is to market the developing benefits through various modes of communication and to target specific audiences with information that is

both attractive and relevant to the targeted audience. Marketing Skolkovo will be a long-term campaign for the Foundation and a campaign for Russia itself because it is a national project largely supported by Russia's government.

Goals

Well-established technology centers like Silicon Valley are innovational achievements that have had significant time to develop their popularity and secure internationally recognized reputations . In this regard of widespread recognition, Skolkovo stands at a notable disadvantage. Unlike that of other technology centers, however, the development of Skolkovo's appeal and reputation must be rapid because competition is quickly growing competition and new competitors can enter the market offering better deals. The goal is to create a global buzz about Skolkovo and market strategically by (1) micro targeting specific audiences with Skolkovo's unique elements (2) minimizing the anticipated risks associated in participating in the venture for each target audience (3) spreading the word about Skolkovo through all possible modes of communication making the brand as recognizable to as many people as possible.

Risk Factor

Skolkovo is a venture that intends to have global impact and influence, and because of its goals, it must consider itself in direct competition with the similar projects of other nations that offer many of the same benefits. Skolkovo's primary risks arise from the fact that (1) it is a new venture that inherently has a high risk of failure and (2) it is sponsored by the government of an emerging country notorious for its corruption and lack of transparency. As a consequence of these risks, people with initial interest in the Foundation will be hesitant about participating.

The Skolkovo Foundation can mitigate these anticipated risks and lessen skepticism through publicized plans that highlight the Foundation's strategy for confronting these risks. The Foundation's public relations plan of action should include: (1) a survey of the target audiences and identify their biggest concerns, (2) address their issues directly through promotional strategies that clearly explain how these potential risks will be mitigated and (3) enumerate the potential benefits and opportunities for personal gain that come from being a part of the Foundation.

For example, there is little incentive for students (particularly in the United States) to leave their comfort zone and take personal risk by studying or working abroad especially in a country with a culture as foreign as Russia's. Several engineers from the University of Southern California were presented with a set of possibilities regarding their futures after their undergraduate education. They could (a) go to graduate school/perform research in England or Russia, or (b) go to graduate school/perform research in China or Russia. In both scenarios, students all chose England or China. When asked why Skolkovo was not appealing (despite all the benefits), the students explained that Russia is too foreign, that they do not speak the Russian language and that they barely know anything about it – as if it was a nation veiled in secrecy. The students were surveyed again under new conditions. They were asked whether or not they would be willing to study or work in Russia if (a) short educational trips or undergraduate study abroad programs were offered, (b) the courses were taught in English and (c) that state of the art technology and funding for research would be made available to them. Under these new conditions, they all stated that they would be willing. These additional proposals helped ease their concerns and made the students more open to the idea of working abroad in Russia.

Strategic Communication

Effectively marketing and promoting Skolkovo to our target audiences presents a difficult challenge. However, identifying and reaching the target audience presents a different challenge altogether. An effective strategy for promoting Skolkovo would be to adopt similar tactics and methodologies utilized in political campaigns in the United States. The campaign would promote the Russian nation in general and, more specifically, the Skolkovo Foundation. However, unlike audience picking their top candidate in political campaigns, our target audience will be choosing their best investment and career opportunities.

The Internet

The large success of US President Barack Obama's campaign can be attributed, in part, to his online presence and his exploitation of the benefits that the internet offers (including wide accessibility and real-time updating). The following include some of elements crucial Skolkovo's internet campaign: a visitor-friendly main website, a strong social networking presence, an up-to-date and active blog, interactive elements for user interest and involvement, and custom advertisements on all websites that are relevant to our target audiences.

The main Skolkovo website needs many adjustments. The goal is to make the site user-friendly, interactive, and informative. Social networking on the website should receive significant attention because of its wide adoption and is considered the unrivaled tool for global communication. Some social networking

websites for promotion include: Facebook, Twitter, LinkedIn, Tumblr, Reddit, and Digg. The links to all of these networks need to be easily accessible from the official Skolkovo website. (As of today the official website only offers a link to a rarely updated blog). In addition, the website needs to be cell phone friendly (especially for the iPhone, the Droid, and the Blackberry). Another consideration is to create a Skolkovo "app" for iOS and Android devices, which would send 'push' notifications and news in real time to the target user.

News about Skolkovo needs to be updated regularly to keep potential students, researchers, and investors apprised of new developments including but not limited to: new promotional programs, the acquisition of new support and new funding. Real-time updates are extremely important, and they are a great tool for providing transparency (a feature that is important to potential investors). The website also requires a forum for easy, user participation. This will allow visitors to submit questions, voice their concerns or make comments without having to search for contact information. The internet user's attention span for any given website is limited; therefore, every link needs strategic and obvious placement.

Creating a user e-mail database is an additional option that provides the Foundation with the opportunity to notify interested persons in a regular newsletter of the developments and progresses of the Foundation. These elements of the Skolkovo's online presence will foster an image of transparency (a key element for investors, according to Dave O'Callaghan of Cisco Technologies).

Another focus, specified by Kate Maeder of Storefront Media, is online advertising. According to Ms. Maeder, it is essential to utilize tools such as Google AdWords and Google Analytics for strategic advertising and track ads in order boost name recognition. Some of the ads that she referred to included: Google search ads, banner ads, and Pandora ads (which are particularly effective in targeting those under 25 in the United States). By using the previously mentioned online resources, it is possible to find out which websites are most frequently visited by our target demographics around the world (e.g. scholars, Internet entrepreneurs, etc). These websites should be the focus of our advertising campaign, and the ads should make clear the unique elements of Skolkovo to attract internet users to the Skolkovo website for more information. These online tools provide the simplest way to gain an insightful advantage over specific audiences and their interests. It is important to use these tools to reach the correct audience with only the most pertinent information. This will help save funds in the long-term by cutting the costs of poorly targeted advertising.

In addition to the previously mentioned strategies, new possibilities for promotion and advertising through online communication arise daily. And it is necessary to take advantage of their benefits to help promote the project.

Print

Although suffering from the rise of online activity, prints ads are still crucial especially in targeting older demographics. Ads should be printed in a variety of magazines (science & technology, foreign policy, business, economics, environmental), academic publications and national newspapers.

The Roadshow

Presentations regarding Skolkovo are essential to increasing widespread awareness. Recruiters should travel around conferences and universities with presentations, pamphlets and information about Skolkovo. These experts should be knowledgeable about the project and need to sell Skolkovo to their audiences (as do start-up entrepreneurs when pitching their company to investors). In a sense, they are a lot like career recruiters that come to college universities

Category	Type	What is important for them?	How to pitch to them?
Service Providers	Auditors	Huge potential clientele, economic transparency, no bribery issues	Direct negotiations and presentations. Make sure international service providers get the same treatment as the local ones - no preferences for Russian entities.
	Lawyers		
	Banks		
	Insurance companies		

Investors	Institutional/ Private	Economic transparency, legal protection, pool of start-up projects and entrepreneurs, high returns opportunities, shareholders' protecting legislation	High level of publicity: focus on the opportunity to gain high returns, access to new technologies, strong support from government (guaranteed legal protection, special tax regime), a number of promising start-up projects and fine entrepreneurs, an impressive list of partnering corporations (and details of such partnerships)
	Foreign/National		
Participants	Government	Taxes, international prestige and image of Russia as an innovative economy	Meetings with state representatives; direct presentations with focus on bright perspectives and successful cases of other countries; formation of the GR department
	Partnering corporations	New promising projects, economic transparency, higher exposure to the growing Russian market, no bribery issues	Direct negotiations with leading Russian and multinational corporations, organization of various conferences on campus with representatives of such corporations as special guests; make sure multinationals understand that the fair competition will be guaranteed and thus they will be treated in the same way as Russian companies
	Entrepreneurs	Possibility to interact with investors, patent and copyright protection, infrastructure, access to technologies of partnering institutions, Skolkovo University as a research base	High level of publicity (advertise heavily on the Internet and in the leading Russian business media, i.e. Forbes, Vedomosti) and organization of conferences sattracting both domestic and entrepreneurs from abroad. Focus on the access to the technologies and expertise of partnering corporations, modern infrastructure, and government help.

to promote their companies and find potential interns.

It should be noted, however, that investors fall under many different sub-categories and that they have differing preferences as well: a presentation to a SWF is different from a presentation to a closed-end fund. To be more specific on this aspect, we would need to have direct interaction with institutional investors and make observations ourselves to understand these mostly confidential processes. It must be understood that such a task can be carried out on behalf of the Skolkovo Foundation or the Russian Government but hardly by a private initiative.

Recommendations for Skolkovo University

I. Business education for start-uppers

For this part of our paper, we contacted Alexandra Johnson of Draper Fisher Jurvetson and Aliona Popova for their expertise. We also analyzed some real-life pitches, which have and have not received investment.

When asked what they need to get their businesses up and running, Russian start-uppers indicate two main issues: money and business advice. These two inputs can be provided by Skolkovo, which offers exposure to venture capital funds and promises access to business advice and consulting services. However, VCFs are very careful in their investments and need to understand clearly the companies that they are investing in; hence the need for a perfect pitch. The perfect pitch is a presentation by company founders to potential investors, and the purpose of the pitch is to persuade investors to contribute both their money and advice to the start-up (an outline of a "perfect pitch", approved by Alexandra Johnson, is included in the Appendix to this paper).

The essential structural components for the perfect pitch include the following:

Soft Skills	Hard Skills	Attitude	Preparation	Reaction
Public speaking skills Negotiating skills Argumentation skills Excellent perception of time	Attractive slides Sound financial forecasts Ability to do quick calculations	Business Attire Politeness & respect Stable psyche & confidence Showing commitment to your business	Mock pitches Constant review Videotaping pitches Check equipment Check presentation for spelling errors	Ability to answer every question Ability to withstand stress

It is arguable that making a pitch by following the guidelines is easy, but unfortunately this cannot be said about the skills necessary to make a brilliant pitch. For example, the very first skill, public speaking, is one that many Russians lack. This fact can be witnessed at conferences, round tables, universities and Intel competitions (where Russian teams reach the final almost each year, but never manage to win). These results can be attributed, in part, to poor presentation skills. In addition to these general skills, presenters must develop aesthetic taste and overcome any tendencies to lie in their presentations. Fortunately, each of these skills can be developed through learning and practice, and to help foster these skills, we propose a program of business education at SIT that comprises the set of courses mentioned below for start-uppers. An additional consideration would be to have experienced entrepreneurs as lecturers for these courses rather than academic professors. The common principle should be minimum theory and maximum practice and application:

Soft Skills	Business Skills	Design	Surviving in Russia'
Public speaking Logic & critical reasoning Business psychology & cultures Time management Pitching trainings	Business Valuation Financial Forecasting & Modeling Business English Strategy Marketing	Aesthetics & Design Presentation-making	Tax Optimization Compliance Bank relations (BR as opposed to GR – government relations)

The final block is arguably the most important one for new entrepreneurs in Russia. Overcoming red tape and filing necessary documents can be both time consuming and costly if you hire advisors, lawyers and tax consultants. We strongly believe this 'know-how' for overcoming barriers to business within Russia should neither be a secret nor should it be learned through trial and error. The course can explain simply and clearly how to overcome these obstacles while remaining pertinent and tailored to start-uppers' needs.

Regarding the other course 'blocks', a legitimate question arises, "What is the point of these courses if similar ones already exist?" The reason is that the average course will (1) require significant personal investment, (2) it will most likely will not return an adequate value-for-money ratio and (3) the outside course will not be adapted for the start-uppers that Skolkovo hopes to attract. Although there is an initiative "Online school for start-uppers" by Alina Popova (http://startupafisha.ru/stupschool.html), its main drawback is that it is, a school online, and while it can present worthwhile information, it cannot offer the same quality of teaching received in person at Skolkovo. An online school can present theoretical background and case studies, but it does not allow for live training, immediate feedback and interactivity which are all necessary for rapid and practical learning.

II. Campus & Facilities

The campus and its facilities need to be tailored directly to the students by providing them with space to study and the resources with which to optimize their studies. In developing the Skolkovo campus, there are a few lessons to be learned from libraries at major universities in the United States. At most universities, at least one library on campus is open 24 hours. This accommodates students with different schedules and varying course-loads. Within the library, there are spaces provided for individual study and sound-proof rooms for group study. And the libraries are equipped with computers that are open to anyone on a first-come first serve basis. At a cheap rate, students can also use the library's printers and copying machines.

The library's resources are often digitalized. A student can sign on to the library website with his university identification number and easily search for any book in the system. University libraries are also subscribed to hundreds of academic publications that range in topic across many fields. These subscriptions allow students to conveniently access valuable resources for free at any time.

III. University promotion and recruitment

The University, even with the best staff, courses and facilities, will never be successful without equally impressive students, and this is why it is crucial to the University (a) raise awareness about its programs, (b) discover and attract young talent and (c) create a diverse international student body. Below we propose measures to achieve these goals.

	Type	**What is important for them?**	**How to pitch to them?**
Students	Russian	Career perspectives, dormitories & excellent facilities, prestigious diploma, military department (male students), education loans/attractive stipend and grants	Advertise on social networking websites and education-related websites, organize "Open Door Days", organize high level of publicity in media, clear and full information on the official website, presentations at other partner Russian universities (legendary FizTech can be a good example)
	CIS	Career perspectives in Russia after graduation, dormitories, tuition fees, education loans	Same as for the domestic students, but also organize presentations abroad on campuses of partnering universities in those countries; participation in Master's/PhD fairs (eg QS Grad School)

	International	Career perspectives worldwide, courses taught in English, semester abroad opportunities, high-quality facilities, affordable tuition fees (dependent on ability), education loans, diverse student body, social life, travelling opportunities	Emphasize Russian experience and 'greater Skolkovo' competitive edge – 5 areas of expertise, link to an innovation hub
Professors	Domestic	Salary, job stability, research opportunities	Look for candidates at PhD fairs and offer the competitive salary Offer long-term contracts
	Foreign	Salary, job stability, research opportunities, ready accommodation, no visa issues	Hire graduates from the leading schools at PhD fairs, attract Russian professors from American and European schools, provide accommodation on campus/in its proximity, lobby changes to the current visa legislation (no need to prolong the visas so often), easily recognize foreign diplomas (no need to prove that Harvard degree worth something)

A. Summer schools

For students around the world, summer schools serve as an opportunity for future pupils to familiarize themselves with the dynamics of academic programs, take additional classes in their area of interest, fulfill education requirements*, travel and make new acquaintances. By introducing the summer school option, the Skolkovo Institute of Technology will be able to attract new talent, increase its awareness among the global student population and generate additional cash flow.

	Business Track	Research Track
Duration	2-8 weeks	
Main subjects	• Entrepreneurship (see "Education for entrepreneurs) • Technology and Management in Oil & Gas • Capital Markets & Investment in Emerging Economies	• Subjects relevant to 5 Skolkovo clusters (eg. Physics, Biology, Advanced Mathematics) • Introduction to Nanotechnology, Biotechnology, etc.
Admissions	Personal statement + References + Academic Records	
Tuition Fees	Partially subsidized (depending on academic ability and financial need)	
Project Work	Creation of a business plan in collaboration with a mentor from a Skolkovo-based start-up/ Skolkovo Business School	Research project/ assistance in greater Skolkovo
Optional	Crash course in Russian Language Business Russian (language, ethics, customs)	

B. PhD fairs

In Russia, there is a growing belief that if a PhD graduate is recruited by his alma mater, it means that he was unable to secure a position at a better institution. As a solution to this problem, there are a growing number of PhD fairs that help top graduates find positions at other universities (often abroad).

Currently, only HSE and NES are recruiting top graduates at such fairs. As a result, the number of graduates recruited by Russian schools is very low, and there is little, if any, competition with international universities including LSE, Harvard and Stanford. We believe that the Skolkovo Institute should also become a participant of these fairs as part of its promotional campaign and to 'intercept' talented young graduates who desire to follow an academic track.

C. Online Academic Resources

Video courses. Previously there were two main ways to assess the quality of education at a University: (1) by actually studying there or (2) by doing exhaustive research on the school in question. However, with the creation of iTunes U, there now exists an alternative to the first method. Now it is possible to watch courses from the world's best universities for free. The Skolkovo Institute should participate in this project as well (with courses taught in English) because it will prove to be an efficient way to increase awareness for the University and to help it build a recognizable and respected brand.

Online interactive games. Another way to spread awareness is through interactive online games, like fold.it (http://fold.it/portal/info/science) and Eterna (http://eterna.cmu.edu), which rely on the concept of "solving puzzles for science." These games are helpful for promotional purposes and provide scientists with nonfinancial support.

D. Competitions

There are several types of competitions that could be used by the Skolkovo Foundation both to promote its programs and to attract young talents:

1) Since Soviet times, traditional "Olympiads" in relevant subjects (e.g. physics, chemistry, biology, programming) have been the least costly way to discover potential talent. Such Olympiads, if hosted by Skolkovo, could become an alternative to the Federal Olympiads currently offered, and the Skolkovo Institute could offer subsidized studies at its University as a potential prize. Russian high school students are the target audience of these Olympiads.

2) The Institute can also host competitions similar to that of Intel's Science Talent Search. Participants (college or pre-college Russian students) present their scientific projects to a panel of judges, and winners earn funding for further study and development of their ideas.

3) International competitions can be held online, with offline semifinals and Grand Final

• "Ace Manager" by BNP Paribas spans four weeks of intense teamwork on cases and is both educational and lucrative – it gives the participants a good understanding of work across BNP Paribas' three core businesses. A similar competition could focus on entrepreneurship and take players through the process of setting up their own business. Given the popularity of Ace Manager, this seems to be a highly promising idea. Target audience – Bachelor/Master/PhD, international.

•"Intel and UC Berkeley Technology Entrepreneurship Competition," MIT's Mass Challenge or the closely related Russian competition, BIT, are less focused on educational purposes and involves elaboration of an independent business plan on the basis of an innovative idea. Target audience is the same, but more advanced –the participants should already have an original idea and the necessary know-how.

•Finally, the program known as "Start-Up Chile" is a unique form of competition. The program focuses on importing entrepreneurs – the teams that win the competition are offered grants to work in Chile's "Valley". This is an even more advanced competition – you should already have a start-up and a team. However, in terms of attracting talent this unprecedented measure may prove to be extremely efficient in Russia too.

Conclusion

In this paper, we have given an approximate description of what Skolkovo is going to become in near future. Drawing on other countries' experience, we have uncovered key factors for the project's success. The fact that most of these have been recognized by Skolkovo founders implies that chances are high for the project to prove successful in the end. Basing on the generous contributions by our experts, we have also developed a set of recommendations that might contribute to Skolkovo's goals of attracting cream-of-the-crop talents and minds, helping set up businesses and encouraging innovation in Russia. We would like to express our genuine hope that these goals will eventually be achieved, and we are looking forward to see the project bear its fruit.

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Single-Industry Towns in Russia: The Case of Cherepovets

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In recent efforts to modernize the Russian economy, which remains characterized by its over-reliance on natural resource exploitation, policy-makers have increasingly focused their attention to the struggle of Russia's many single-industry towns as one of the most significant hurdles to economic diversification and sustainable growth. Single-industry towns, also known as mono-industrial or company towns, are a phenomena hardly unique to Russia: with a shift towards deindustrialization and the decline of mining and heavy industry throughout the Western economic sphere, cities over-reliant on one particular industrial branch or company have been hit by economic depression in regions across Europe and the U.S. However, in Russia the legacy of central planning as well as the fairly recent shift to a free market economy exacerbate the problem of single industry towns, which are increasingly characterized by mass unemployment, lack of competitiveness, out-migration and bankruptcy.

This has been the case for Cherepovets, the largest city in Vologda Oblast situated in the northwestern Russia and built around metallurgical works run by the joint stock company Severstal, a global exporter of ferrous and non-ferrous metals. Located between Moscow and St. Petersburg and at the crossroads of the major Volga-Baltic waterway and West-East railroads, the city has the potential to become a center of economic activity and innovation. However, with unemployment up to 16% following the crisis, declining living standards and little foreign or domestic investment, the city exemplifies the problems of Russian single-industry towns.

The following paper will attempt to formulate a range of policy proposals that could address Cherepovets' economic woes and encourage greater economic diversification. It will begin by providing a brief background on the history of single-industry towns in Russia as well as a summary on recent government policies concerning the issue. The second part of the paper will focus on the specific challenges of Cherepovets, since those symbolic challenges are also experienced by numerous other single industry towns in Russia. Thirdly, the paper will formulate a series of policy proposals based both on international experience as well as the specific economic landscape of Cherepovets. The paper will conclude with the envisioned effects of these policies, their possible limitations and their usefulness in the development of a comprehensive strategy for resolving the problem of mono-industrial towns.

Background information

The Russian government defines single-industrial towns as cities in which one company or production chain employs more than 25% of the town's inhabitants and produces 50% or more of the total output of the town. There are currently over 400 single industry towns in Russia, and their cumulative populations total approximately 23% of Russia's urban population.[1] In more general terms, political scientists and economists describe single industry or company towns as usually relatively isolated communities dom-

1 Mikhail Dmitriev and Tatiana Khomiakava, "Anti-Crisis Strategy of Russian government: New Policies for Single Industry Towns" (Paper presented at OECD Conference, "Developing Rural Policies to Meet the Needs of a Changing World," Quebec, Canada, October 14 2009).

inated by one particular company or industry, typically situated where a particular resource is abundant but overall economic opportunities are limited.

In Russia, most of these cities emerged under the Soviet system of economic central planning, which relied heavily on regional specialization. Whereas post-war economic development in Western market economies relied on geographical agglomeration of economic activity, Soviet economic development, driven by political and ideological rather than purely economic factors, resulted in a highly dispersed economic landscape characterized by an unusually high number of small mono-industrial towns covering even the most remote areas of the country, rather than being concentrated in one particular region. Soviet economic planning and state subsidization not only distorted industrial location, but also transport costs and production patterns, leading to a concentration on heavy industries in specialized cities often disconnected from larger markets.[2] As Russia's industrial structure has begun to change from a manufacture-based to a service-oriented economy and old industries, now operating in a free market environment, have either become inefficient or forced to undergo significant restructuring, many single-industrial towns specialized in the manufacturing and mining sectors have experienced considerable decline, exacerbated by the absence of alternative employers and industries.[3]

Current Problem and Challenge

The issue of single-industry towns was first seriously raised at the government level during the global economic crisis of 2008-2009. None of the economic downturns of the 1990s caused the authorities to devote particular attention to the problem. This changed in the summer of 2009, when the inhabitants of the Northern single-industry town Pikalevo blocked a highway in a highly publicized effort to protest against deteriorating living conditions. Since then, the federal government has begun to develop policies concerning single-industry towns. However, these policies do not seem to be a coherent and sufficient response given the current scope of the problem.

The immediate response of the authorities to social protests in single-industry towns was to stimulate employment in the 127 most sensitive towns through a direct economic stimulus program of nearly $1 billion (44bn rubles). Despite initial hesitation, this program has been extended until 2015 and expanded to increase long-term policies to attract investment, develop industries, housing and communal services.[4] However, so far no general strategy of encouraging local, self-sustainable economic activity has been developed.

Cherepovets, despite its high level of unemployment, was not one of the 27 towns to receive an economic stimulus package from the federal government. One possible reason for not receiving stimulus could be that in relation to other Russian single-industry towns, Cherepovets' size and location in Northwest Russia imply a significant potential for economic regeneration, particularly compared to certain smaller and completely isolated towns in Northeast Russia. Cherepovets thus fills a rather peculiar position among other single-industry towns.

In 2003, local authorities in Cherepovets devised a 10-year plan for economic renewal named "Cherepovets – the city of leaders." The plan stressed the need to create a better business environment in the city and invest in human resources and environmental regeneration. In 2010, this strategy was renamed "Foresight" and updated to include economic diversification as the priority for the city.[5] One of the most ambitious projects currently in development is the industrial park "Sheksna" that will allow for stronger economic ties between Cherepovets and Vologda, the administrative center of the region, and facilitate the creation of an economic agglomeration. Local authorities have also invested in the development of tourism, but due to the high degree of air and water pollution in the region such efforts hold little promise for the near future.[6] Current government policies both at the local and the federal level have thus proven relatively ineffective at developing a long-term strategy for the economic renewal of Cherepovets, despite the

2 Per Botolf Maurseth, "Divergence and Dispersion in the Russian Source," Europe-Asia Studies, 55 (2003): 1165-1185.

3 Masahisa Fujita, Kazuhiro Kumo and Natalia Zubarevich, "Economic Geography and the Regions of Russia," (paper presented at Trade Policy and WTO Accession for Development in Russia and CIS – 2006 World Bank Trainers Course, March 13-24, 2006).

4 Sinatti Piero, "Russia: The Revolt at Pikalevo," East Europe and Asia Strategies, http://www.eastonline.it/index.php?option=com_content&view=article&id=77%3Arussiala-rivolta-parte-da-pikalevo&catid=34%3Aeast-26&lang=en.

5 Gorshenina Olga, "Forsight Cherepovtsa," ["Foresight of Cherepovets"] (interview with Cherepovets mayor O. Kuvshinnikov), http://bujet.ru/article/89808.php.

6 Dubinicheva L., "Razvitiye turizma v Vologodskoy oblasti," ["Development of tourism in Vologda region"], http://ags-vologda.ru/download/conf_2009/Dubinicheva.pdf.

city's promising potential as a regional economic hub between Moscow and St. Petersburg. The following section will address a series of policy proposals that could capitalize on the city's advantages and address its current economic problems, particularly the high unemployment among the city's inhabitants.

Policy Proposals

Policies at federal level

A crucial problem to address is the relative immobility of the Russian workforce. On average, Russians change their place of residence 1.4 times during their lifetime, compared to 13 times in the U.S.[7] The workforce tends to be tied to single-industry towns because of high costs associated with moving. Low labor mobility is an obstacle to economic development as it harms the flexibility of the country's economic structure. At a federal level, the government should introduce a state program co-financing movement to another city. This way some of the cities that are better situated can grow to become more sustainable regional hubs rather than having to sustain several small unsustainable cities in their place.

Federal government subsidies of declining industries in order to prevent companies from laying off more workers, widely used by the Russian government especially in the light of social unrest, cannot be a sustainable policy in the long run. Such programs deprive industries of the incentive to modernize and to renew an ineffective workforce. Similar government-initiated programs conducted in Western Germany and Northern England in the 1960s and early 1970s, which also aimed at diminishing the social costs of structural change through massive monetary transfers to prevent people from slipping from unemployment into poverty, proved to be very expensive to maintain in the long-run and did not promote the creation of new economic structures.[8]

Policies at regional and city level

Experiences in Europe have shown that almost all processes of economic renewal begin with investments in the physical city environment and infrastructure that renovate and improve derelict houses and industrial buildings and roads and address the most immediate pollution problems. In order to attract new investors and a qualified labor force, it is important to invest in a positive image and quality of life for the city's inhabitants.[9] Industrial single-industry towns tend to have a long-established reputation of being monotone and polluted communities with little to offer to incoming inhabitants in terms of recreation, community services or interest in innovation. Steps towards economic diversification should thus be accompanied by efforts to improve the given city's reputation through increased investment in quality of life and infrastructure. For example, in the German Ruhr Valley, the industrial Emscher Area, formerly Germany's steel and coal powerhouse, has been transformed into recreational parks, restored agriculture landscape as well as exhibition spaces for artists.[10]

Cherepovets is well connected to both Moscow and St. Petersburg by highways and railway and possesses a river port as well as an international airport. This means that all transport and communication infrastructures necessary for tighter economic integration are already in place.

However, the extent of pollution through the metal industry represents a major obstacle to economic renewal that could at the same time represent an opportunity for developing the alternative energy sector and investing in environmentally sustainable solutions. Part of the solution could for example consist of creating research centers and attracting industries involved in the manufacturing of products that will help to reduce contamination (e.g. filters) or save energy (e.g. energy-efficient light bulbs, new isolation materials, etc.). In the U.S., programs incentivizing the creation of alternative energy and providing the tools necessary for local citizens to become a part of this new industry have proven highly successful in renewing economically depressed company towns.[11] Similar strategies

7 Stanley D. Brunn, review of Russia's Northern regions on the Edge: Communities, Industries and Populations from Murmanks to Magadan, by Vesa Rautio and Markku Tykkylaeinen, Eurasian Geography and Economics 50 (2009): pp. 613–616.

8 Dr. Bernhard Iking, "Promoting industrial change in structurally disfavored regions – The case of the 'Ruhr Valley' in Germany – with special emphasis on the current restructuring plan of the city Dortmund" (Paper prepared for the International Symposium for industrial regeneration of Korea, Germany and Japan, Incheon, Republic of Korea, October 6, 2004).

9 Ron Boschma1 and Jan Lambooy, "The prospects of an adjustment policy based on collective learning in old industrial regions," GEOJOURNAL 49 (1999): 391-399.

10 Claudia Schreckenbach and Christel Teschner, "IBA Emscher Park a beacon approach, dealing with shrinking cities in Germany," Technische Universitaet Dresden and Kent State University Urban Design Collaborative http://www.cudc.kent.edu/d-Service-Learning/Mahoning/Emscher.pdf

11 Kristin Tracz and Jason Bailey, "Building Clean Energy Careers in Kentucky," Mountain Association for Economic De-

could be implemented in Russia through routes as varied as subsidies and grants for alternative energy industries and research or more direct methods such as a renewable portfolio standards that simply require towns to begin to generate alternative energy.

Many European industrial regions have had positive experiences with creating regional institutions that promote the cooperation between different local and incoming actors and foster learning and innovation. Rather than simply relying on a top-down model of governance, such approaches to economic restructuring bring different actors into the process and integrate local needs and knowledge. A particular focus of institution building in Cherepovets should be the increase of interaction and cooperation between Cherepovets and Vologda. While Cherepovets certainly has the greatest economic potential in the region, Vologda serves as an important administrative center. Closer inter-city cooperation could be achieved by creating a single economic zone. This allows for greater investment and therefore greater opportunities for employment than would otherwise be possible. Additionally this allows the members of these smaller cities to cooperate rather than having to compete with each other fom resources elsewhere in Russia. The creation of the industrial park "Sheksna" is a step in the right direction that should be expanded – it is situated between Vologda and Cherepovets and has the potential of attracting workforce and investment from both cities.

Cherepovets further has to begin searching for a new comparative advantage through promoting local entrepreneurship. Promotion of entrepreneurship can be divided into three important areas of action: regulatory overhaul, ensuring access to capital and education of the workforce. Firstly, authorities should ensure that the regulatory framework encourages entrepreneurial activity, which is currently not the case in Russia. This process should begin with a tax code simplification that would increase access to capital and lower the barriers of entry to the market. This should continue with a simplification of small business regulations and inspection mechanisms. Specifically, the regulators require oversight in order to assure that they do not suck capital out of the market by extorting funding from small businesses through extraneous inspections. The city might want to consider setting up an office in order to facilitate entrepreneurship by assisting people with ideas, obtaining necessary capital, and legal help to implement the initiatives.

The second step is to ensure access to capital for those wanting to set up their own business. This is naturally tied to attracting foreign investment, but the government could increase the amount of capital available to entrepreneurs by setting up a competitive capital fund that entrepreneurs can compete for grants from. The government can also make public funding available to support research and development projects by innovative small and medium-sized enterprises.[12] The general aim of these efforts would be the creation of new and sustainable jobs that are technology-driven, while also developing a highly skilled workforce.

Investing in education has continuously been one of the most successful policy measures that helps retain young people in the city, attract firms and new technologies and ensures long-term innovative development. Educational institutions can create partnerships with existing firms to modernize production processes, maximize existing potential and finding a new comparative advantage. Local policymakers should support "competence clusters" which are relationships between university departments, enterprises, banks, research labs and production-oriented service organizations. This is one of the central pillars of economic restructuring.[13] Even if smaller single-industry towns do not have access to university infrastructures, they can create linkage between local trainings centers, programs and regional research clusters.

It is essential to keep in mind that the decline of a single-industry community is not a purely economic phenomenon but instead comes with the decline of a whole system of social relations and the self-perception of that community and its inhabitants and thus also requires a social and cultural renewal. The most successful restructuring processes have thus been those that have not only attempted to attract new industries to a certain city but have also given the city a new positive image, self-definition and improved its living environment. Examples of these initiatives include urban renovation projects, natural parks, public spaces and investments in culture and the arts.[14]

velopment Report, November 2010. http://www.maced.org/files/Clean_Energy_Careers.pdf.

12 Iking 2004.

13 Benjamin Teuber, Alexander Titov, Natalia Zapatero, Latda Keopaseuth. "Modernization in Russia: UK experience and modernizing and restructuring single industry cities," ESCP Europe Final Report, UK Trade & Investment. http://ukinrussia.fco.gov.uk/resources/en/pdf/3498585/monogoroda.

14 Kleine, H., Siebel, W., "Die soziale Strategie der IBA," in Bauplatz Zukunft. Dispute über die Entwicklung von Industri-

Conclusion

As the analysis has shown, Cherepovets has the potential of becoming a flourishing economic center. It is conveniently located between Russia's most dynamic cities and already benefits from well-developed infrastructure networks. However, its over-reliance on Severstal as the city's main employer cannot be maintained in light of the company's modernization efforts that will inevitably further reduce the company's workforce and thus exacerbate unemployment in the city. At a regional level, the government should focus their efforts on improving education institutions and initiating re-training programs for the long-time unemployed. Furthermore, they should focus on creating an environment that would attract new investors and companies as well as facilitate local entrepreneurship through reducing regulation, making capital available and investing in the living environment of the city, particularly housing and community services. The envisioned effects would be a city that could attract smaller and medium-sized companies in particular that would benefit from the lower property prices and production costs and nevertheless benefit from the proximity to Russia's economic centers.

However, it is important to note while most of these policy suggestions are equally applicable to single-industry towns across Russia, certain single industry towns are suffering from less favorable conditions. Cherepovets, with 300,000 inhabitants, is a relatively large city and thus easier to restructure than many of Russia's smaller and more isolated single industry towns in which location, insufficient infrastructure and unfavorable climate represent significant obstacles to attracting new companies. Going forward, it is essential to target cities such as Cherepovets to revitalize, which will facilitate the long-run goal of either relocating populations or providing new employment. Through the widespread application of this method of targeting promising cities for revitalization and providing labor mobility, the problem of mono-industrial towns can be wound down.

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Venture Capital in Developed and Developing Regions: The American and Russian Systems

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Abstract

During their early phases, businesses with high growth potential have historically relied on financing from sources other than traditional capital providers. In the developed economies of the United States, the United Kingdom and Canada, venture capitalists nearly ubiquitously fill this financial role. The availability of such capital is economically crucial and has promoted the emergence of numerous successful firms in these and several other developed economies. This has led to the conclusion that venture capital is one of the basic factors influencing a region's economic growth. More recently, venture capital has started to reach emerging economies where governments increasingly encourage domestic venture capital industries. However, this has proved to be challenging in transitioning economies. The purpose of this study is to identify critical success factors for venture capital firms in the United States, compare these factors to those present in Russia, and explore the developments necessary for a robust Russian venture capital system.

We first provide a historical and contemporary overview of the American and Russian venture capital systems. We then examine VC through the lenses of agency and institutional theory. Finally, by citing Silicon Valley's exceptional characteristics and Russia's shortfalls, we propose a number of reforms and additions to the Russian system.

1. Modern Venture Capital in USA and Russia

Modern American Venture Capital: Integration into the US Economy

Venture capital is an integral element of the modern American economy, inextricably linked to the development of startup businesses and technological innovations. The American venture capital industry drives the economy by encouraging competition, stimulating scientific development, creating employment, and spawning new industries. The National Venture Capital Association reports that in 2008 the American economy derived approximately 21% of its gross domestic product from venture-backed returns, collectively $2.9 trillion among American companies. Additionally, venture-backed jobs accounted for 10% of the national private sector total. American venture capital investments themselves have increased to nearly $500 billion in the past four decades, both promoting economic stability throughout the time period and heavily supporting the computer and digital revolutions. How did this financing method grow into a standard model for business investments? The answer lies partially in the history of American venture capital throughout the past century and its spurning of multiple related industries.

History in Brief: Origins to the Computer Age

Electronic communications advancements in the first decades of the twentieth century mark Silicon Valley's earliest demonstrations of entrepreneurial

networking and resource mobilization. In 1908, Cyril Elwell, a Stanford graduate, was working on a spark-based radio telegraph system in Palo Alto, California. He received backing from David Starr Jordan, the president of Stanford, and C.D. Marx of Stanford's Civil Engineering Department, all together creating what would become the Federal Telegraph Company (FTC). Following the nationalization of the radio industry during World War One, FTCs research and development orders skyrocketed. FTC's creation and early boom demonstrates two of what would become Silicon Valley's trademarks: availability of personnel from local institutions and public demand.

The production incentive sparked a series of subsequent events in the Valley. AT & T formed an unofficial conglomerate with General Electric, Westinghouse, and the Radio Corporation of America, essentially dominating the radio communications industry of the west coast. Mackay Interests acquired FTC in the 1920s, only to be purchased by ITT eight years later. These early corporate dynamics brought forth numerous firm spinoffs – Magnavox and Fisher Research Labs among them – which, in addition to firm competition and human resource exchange, became standard elements of the "Silicon Valley Model." The parallel development of electronic firms – such as those engineered by Philo Farnsworth, Ralph Heintz, William Eitel, and Jack McCullough – contributed to competitive marketing, and accelerated the industrial networking in the San Francisco Bay area. In an environment of dynamic growth, innovation, military backing, personnel exchange, and firm spinoffs, these electronics pioneers cultivated the organic foundations of the Silicon Valley Model.

Just prior to WWII, Frederick Terman, often called the "Father of Silicon Valley," dedicated land on Stanford's Palo Alto territory to an industrial park. He later encouraged William Hewlett and Dave Packard to form a company there, Hewlett and Packard, in 1939. Wartime demand augmented the momentum of these events, causing Hewlett and Packard's sales to jump by nearly $1 million between 1940 and 1943. By the end of the decade, Silicon Valley had bloomed into a thriving industrial district, with public funds driving firms to enter various technological niches.

By supplying military products during the Korean War, firms such as HP, Varian, Litton, and Eitel-McCullough underwent spectacular growth in the aerospace and air defense markets. Stanford's laboratories continued help spawn startup companies, and location in Stanford's Industrial Park by this time promised connections to academic personnel and resources. Cold War military demand propelled numerous companies, small and large, such as Lockheed Missiles and Space, Itek, Link Aviation, and Kaiser Aerospace, all of which relocated to the bustling Silicon Valley.

Venture capital as an independent business developed during the 1960s and 1970s. While alternative Small Business Investment Companies were subject to hampering governmental rules and regulations, partnerships between entrepreneurs and investors offered contracts with greater risks and greater returns. The rise of the Western Association of Venture Capitalists (WAVC) in 1969 solidified the preeminence of the San Francisco Bay area as a venture hotspot. These developments again attracted investors, and the number of venture capital firms in the Valley rose by thirty between 1968 and 1975. Reductions in capital gains taxes (from 49.5% to 28%) and massive returns magnetized resources toward this continuously expanding market.

By 1980 a dedicated base of venture capital firms, which had evolved from the work of daring investors in earlier decades, had been established. Genentech and Apple Computer promised computer developments in the early 1980's, adding to the nascent high-tech investment trend characteristic of the period. The 1990s saw more receptiveness to initial public offerings, mergers and acquisitions, and commercialized internet pursuits. Nontraditional sources of funding sprang up in response to the massive internet boom, further diversifying national investment resources and promoting independent business ventures. Traditional venture capital firms underwent an investment swell in the late 1990s due to the speed of the information economy, chiefly within internet, smart technology, and web server venues.

The Entrepreneur and Venture Capitalist in America

The modern venture capital system is distinctly American, and has emerged intimately with Silicon Valley's infrastructural development as described above. The strength of Silicon Valley does not come from any individual, single company, or simple characteristic. It is an organically grown, positively reinforcing, interconnected habitat that benefits in unique ways from each component.

Clusters

Silicon Valley works as a massive network of resources and production, and is the ideal form of an "industrial district." Industrial districting describes the process by which companies in the same line of work geographically cluster to localize supply chains and take advantage of spillover in technology, specialized labor and goods. The process begins when an advantageous industrial region sprouts. After, a technological and knowledge domino effect ripples through the region. Over time, companies flock to the cluster, culminating in an industrial district.

Surprisingly, despite burgeoning virtual communication, the proximity of firms to each other, suppliers, and universities is premium to Silicon Valley's edge. Firm proximity enables high speed mobility of knowledge, funds, and employees. Many venture capitalists even refuse to invest in companies more than two hours drive by car. But with nearly free global communication, is location really so important? In Silicon Valley, to borrow a theme from renowned neoclassical economist Alfred Marshall, "the mysteries of trade become no mysteries' but are as if it were in the air. " Proximity, as such, is the foundation of informal knowledge both within and about firms. Employees from different firms realize the intangible benefits of personal interaction on a daily basis. They share experiences, build trust, discuss and benchmark competitors, even drive their children to soccer practice together; in essence build trust. The cluster has thus become a culture, like in Washington DC for politics or Hollywood for film.

We should regard Silicon Valley as an organic, constantly evolving ecosystem. Like in any natural system, the whole precedes the parts and survival of the fittest individual firms creates the most robust region possible. For instance, if employees leave a firm to create a startup, the original firm suffers the loss of knowledge and labor. Conversely, if this knowledge can be more effectively used elsewhere, the region benefits as a whole. In this respect, the venture capitalist plays the role of creative destruction, destabilizing large firms by indirectly incentivizing breakaway innovations.

Although the American legal structure is likely the most favorable to new business ventures in the world, the government's role in bolstering Silicon Valley should not be overstated. We contend that the government did play a large role in the development of the American computer industry by consuming and funding various technologies. But, it neither selectively nurtured Silicon Valley nor any particular computer firm – instead staying at arm's length. This governance, which allows entrepreneurs in the United States to set up firms twelve times faster and at a quarter of the cost of the European average, will be described under three broad categories: the government as a rule setter, as a financer, and as a consumer.

Government as a Rule Maker

Between 1978 and 1981, the top capital gains tax was lowered from 49 percent to 20 percent, making the rewards for risky investments much more favorable. Additionally, and unique to the American system, the government taxes options when exercised, not when granted, and employs the ERISA rules of 1978. ERISA expanded the funds available to venture partnerships by allowing institutional investors (namely pension funds) to buy into high risk assets. Some less unique but equally vital rules permit general partners of venture firms to sit on the boards of their portfolio companies, don't hold limited partners liable beyond the money they invest, thoroughly protect patents, don't tax partnerships, force accounting transparency, and keep bankruptcy from hindering entrepreneurs who wish to pursue future ventures. Further, especially in California, non-compete clauses in labor contracts cannot be enforced. One more policy must be noted. The Small Business Act of 1958 provided a mechanism by which private funds could match government funds in small Business Investment Corporations (SBICs). SBICs were highly popular investment tools until they gave way to limited partnerships around 1970. They helped to organize and bring to fruition "venture capital" as it is known today.

Perhaps a lesson can be learned from Japan, which has lowered its top income tax rate to 40% since 1997 and has allowed corporate pension funds to make venture investments. Japan also loosened its requirement of years of profits before a company could be listed on the Tokyo Stock Exchange, eliminating a large barrier to funding (and revenue) for technology startups. Japan has also passed a limited partnership act, reduced pre-IPO requirements, and pledged to guarantee loans to start-ups that don't have collateral but still borrow from commercial banks.

Government as a Consumer and Investor

As we have elaborated on in the history section, the federal government has been a key consumer

throughout Silicon Valley's history. Much of this consumption was spurned by military demand for semiconductors and computers, yet we cannot hope for a war to drive clustering and venture capital in Russia. Other products, such as green technology, could certainly attract the Russian government expenditures that military purchases did for America.

We have previously mentioned that the American government, in contrast to many other countries, neither selects nor protects individual firms. The government instead acts as a third party investor by sinking funds into university and industry research. Uniquely, whereas officials abroad may arbitrarily choose public-fund recipients, the American government instead makes funds "earnable" to inspire competition between individuals and teams. According to Henry H. Rowen of Stanford University, "[government] support has constituted about 70 percent of total university research into [computers and communications]… countrywide, more than half of the papers cited in computing patent applications acknowledge government funding."

Universities

Stanford and UC Berkeley, two of the world's premier research universities, are within an easy commute of Silicon Valley. According to James F. Gibbons, former Dean of Stanford University's School of Engineering, "with HP included, Stanford startups accounted for about 60 percent of total Silicon Valley revenues in both 1988 and 1996." Removing HP from the equation, Stanford still contributed over 50 percent of revenues. Universities in an entrepreneurial environment provide well-educated and highly motivated scientists, engineers, and businesspeople to industry. Additionally, universities in the United States typically allow their faculty to consult, and to serve on boards of directors of companies. Likewise, companies sponsor research, conferences, and seminars to engage academics. Industry specialists also have opportunities to instruct in and recruit from prestigious universities. Countries that couple professorship and civil service present obstacles to this public-private knowledge and labor flow.

The Venture Capital Approach – Decision Stage

Venture capitalists should be regarded not only as industry financers, but also as industry coaches. They take part in the rewards, but ultimately own neither the capital nor the companies. Most American venture capitalists undertake similar processes in their investment decisions, starting with the industries they focus on – information technology and life sciences. In the initial selection process, venture capitalists seek ideas which they believe in and understand. Venture capitalists then scrutinize the persona of the entrepreneur, prioritizing his dedication and resourcefulness. The product must be highly viable and marketable in a short span of time, as venture funds tend to last for ten years or less and are often invested within the first three years of their lifespan. It must also be worthwhile for a venture capitalist to coach a company in terms of growth prospects, returns, and risk. In this initial stage of investment, VCs will contract with the startup to divide not only financial rewards, but also control rights. VCs typically invest in company stock; as such, they benefit from success yet bear the risks of poor performance.

Development Stage

Investments are typically sequenced through a series of rounds, beginning with initial financing, and moving through plant tests, first-round market tests, bellwether sales and first redesigns. Venture capitalists have intense long-term relationships with their portfolio companies. They advise their portfolio companies in marketing and overall business strategies, and often attract outside talent to serve on boards of directors, as CEOs, as CFOs, etc. These investor-driven corporate redesigns and redirections ensure that entrepreneurs' goals align with those of the financers. Although venture capitalists mainly provide funding and expertise, they also add the considerable benefits of networking connections and reputability.

Cashing Out

A strong domestic stock market that allows IPOs for companies proven in the short term is one of the key characteristics of a robust venture capital system. The stock market allows VCs to fund and nurse companies in their early stages, then turn to other startups. A healthy financial system also facilitates an equally important cash-out option, the merger or acquisition. In fact, according to Thomas F. Hellmann, "in 1998, 77 venture capital-backed companies went public, yet 190 were merged or acquired." The IPO, merger, or acquisition stage is very strategic because it determines whether the startup maintains its autonomy or becomes a division of another company. The former two paths create inter-firm competition, while the lat-

ter may cause conflict between the venture capitalist and the startup. VCs may also protect themselves from money-losing ventures by restructuring the firm or shutting it down.

Sources of Funding

The vast majority of venture capital funding derives from private and independent investors, including pension funds, corporations, foundations, endowments, families and institutions. Institutional investors (i.e. pension funds) comprise a large component of investments and are permitted invest in high-risk assets under the ERISA rules. Angel investors, individuals who pour their own money into startups, typically precede the venture capitalist in the early stages of startup funding – often referred to as seed funding – and can specialize in ways that larger firms cannot. Angels especially benefit venture capitalists by freeing up funds for later round VC investments and scrutinizing potential entrepreneurs. Additionally, angels can partner or coordinate with large venture capital firms to make deals that are beneficial to both parties. Corporations occasionally perform venture investments though in-house funds that target start-ups with a specific appeal to the mother company. These CEI funds pair investments with a valuable, recognizable corporate logo to enhance the image of the start-up. Because of the high level of precision with which corporations dispense CEIs, there are far fewer of them than regular venture capital investments. Finally, venture capital funds are generally not diversified based on business type, but rather by the stage of business development which the investor hopes to target: seed funds, early stage funds, and late stage funds.

Profile of American Venture Capitalists

American venture capitalists hail from diverse backgrounds, often boasting expertise in multiple disciplines, specifically engineering, the sciences, or business. Engineering ability yields intimacy with technological trends, which allows investors to select worthwhile ventures and hold stake in product development. Though not absolutely necessary, business skill contributes to savvy investment strategies and understanding of corporate dynamics. Therefore, many venture capitalists also hold MBAs.

Each American venture capitalist generally approaches new ventures cautiously, but with an open mind, and thoroughly analyzes the proposal. Partners also examine the persona of the entrepreneur or future CEO, considering his strengths and abilities in light of his goals. If such a person were not utterly invested in their own plan, then a venture capitalist would not pursue the project. This screening process filters all but the most enticing ideas. After, the VC must be willing to support the venture through its early stages. Because of financial incentives and sincere belief in the proposal, successful venture capitalists seek to nurture their investments to fruition. Leaders efficiently distribute their time among ventures, treating each appropriately but moving quickly between them.

Particular geographic areas usually feature amongst successful venture capitalists, such as Route 128 in Massachusetts and Silicon Valley in California. In these locations, proximity to firms, personnel, and resources enhances the speed of corporate actions, allowing networks to rise quickly. Availability of funds tends to attract entrepreneurs who, after achieving success, attract others. This positive feedback loop occurs rapidly, invigorating the organic growth of the district while strengthening the network.

History in Brief: VC in Russia

The Russian venture capital industry began to develop in 1990. In 1993, the European Bank for Reconstruction and Development (EBRD) organized 11 regional venture funds in Russia, which would operate until the 1998 financial crisis. After the crisis only three funds remained – German Quadriga Capital, the Dutch fund Eagle, and the Scandinavian Norum funds.

In 1997, the Russian association of venture investments (RAVI) was established. RAVI's primary goals were to assist the development of the venture industry and to lobby on behalf of the of venture community's interests. According to RAVI, there are about 80 venture funds operating in Russia today. By 2003 Russia had become one of the top ten (8 place) most attractive locations for foreign investments (World Investment Report 2003: FDI Policies for Development: National and International). In 2004, several world leaders in the venture capital industry (Menlo Ventures, Insight Venture Partners, etc.) began to invest Russian companies, pledging over $40 million USD.

In 2006, the Russian Venture Company (RVC) was created as a JSC owned wholly by the government. RVC partners with private capital to invest in finance, IT, telecommunications, nano- and biotechnologies. Its aims to encourage a system of innovation and economic modernization by creating venture funds that should finance around 200 Russian start-

ups. By the end of 2006, the volume of capital held by all of the funds operating in the Russian venture capital and private equity markets reached approximately $6.28 billion USD.

In May 2007 the results of the first competitive selection of management companies to manage Russian Venture Company (RVC) sponsored funds were announced. The winners were: CJSC «VTB Asset Management», LLC «Management Company "Bioprocess Capital Partners"» and CJSC «Finance Trust». (Rusnic, 2008)

Sources of Investments

In examining Russian capital sources we must recognize the prevalence of public funds and institutional investors – for instance, the RVC is authorized with nearly $1 billion USD, which is owned by the Federal Agency for State Property Management. At the same time, funds widely originate from federal or regional budgets and state properties received through various developmental institutions. To date, RVC has backed twelve funds to a total capitalization of $744 million, with RVCs share amounting to $406 million USD. Additionally, these funds back 61 companies and have invested about $200 million USD. At least in terms of RVC, public funds have a higher value than do private funds. In general, domestic fundraising is more difficult in Russia because Russian investors are typically hesitant to assume long term investment commitments (RVCA 2010 yearbook).

Special characteristics of the venture capital process in Russia

In Russia, the share of high-tech based industries is estimated to be, at maximum, 3 percent of the GDP. The venture capital industry was imported to Russia from the outside; its creation was the result of political decisions aimed at transforming and modernizing the Russian economy in a determined manner. Again, the main sources of venture capital in Russia are institutional investors and foreign budget sources.

Russian venture capitalists prefer to back companies that operate in low demand elasticity markets, and with products that contain a high export potential. This is why chiefly invest in pharmaceutical, food industry, building and packing materials production, transport sector funds. These venture capitalists also prefer to provide only funds to startups and not the management and mentoring characteristic of the American system. Although there are several exceptions, decision making is biased and owner-centered. General partner – limited partner (GP-LP) relations are complicated and unstructured. Limited partners try to participate in the decision making process such that general partners are often restricted in their actions, thus causing significant inefficiencies. Risk tolerance and the status of entrepreneurs are relatively low and formal institutions are rather weak in Russia.

Entrepreneurs and capitalists in Russia work in their own circles, and any communication between them appears to be inefficient: entrepreneurs and scientists are often incapable of pitching their projects, while capitalists are not interested enough in startup outcomes to take such a risk in their present institutional environment. Russian entrepreneurs have not had decades of market and demand experience to develop industrial districts, firm clusters, or entrepreneurial culture. This lack of clustering and void of communities of practice results in slower project development and limited workforce nobility. For example, the government-planned Skolkovo project, an intended ultramodern Russian industrial district comparable to Silicon Valley, is to be located at what we consider to be a further than optimal distance from the nearby cultural center of Moscow. Sites such as Skolkovo therefore lack the advantage of a refined, organically grown entrepreneurial network. Silicon Valley, conversely, has organically developed in close proximity to local universities, and has thus formed an efficient system of reciprocal personnel and resource exchange.

Business processes in Russian VC are poorly formalized and cannot be imported directly from the outside – such as from the US – because of differences in institutions: geographic links, culture, capital presence, mobility, legal systems, etc. These differences result in multiple deficiencies.

Though much funding is derived from governmental sources, legislation does not contain any special laws regulating venture capital firms or funds. Because the legal system is weak and social networks are strong, interpersonal relationships, family ties, and networks are extremely important in Russian businesses. Rampant corruption yields bribery, seizures, inefficient management, shortsighted business practices, and distrust between investors and entrepreneurs; in general, the financial activity of business firms is not as transparent as those in Europe or the United States, and hence is less secure for the risk investor. Additionally, while barriers to entry are low for entrance into

"unnecessary" networks, which are not extremely valuable for ventures, barriers are prohibitively high for entrance into "necessary" networks. Because of these factors, there are relatively few small companies.

International management, market, and sales experts are difficult to find in Russia. Not only are there few large-scale exemplary corporations from which to recruit well-trained personnel, social, cultural and legal barriers are prohibitive to immigrants. This internalizes Russia's innovative markets, limiting entrepreneurial and exporting abilities in the global market and inhibiting Russia's economic expansion in numerous industries.

2. VC: Models and Frameworks

Existing research in the field of venture capital is based on different theoretical structures, allowing versatile descriptions of the objects studied. There is, however, consternation over the ability of these theories to provide a full theoretical base for understanding venture capital and its application across a range of environments (Ahlstrom et al., 2000; Arthurs & Busenitz, 2003). While providing some insight, popular theories encounter difficulty in describing the social nature of venture capital, particularly in settings outside of the more developed economies (Bruton et al., 2002; Shane & Cable, 2002). In this section, we examine the applicability of theories and concepts, specifically agency and institutional theory, as frameworks for understanding Silicon Valley and Russia.

The past understanding of the venture capital process was built primarily on agency theory, under which a firm can be considered a conglomerate with a nexus of contracts. This framework incorporates some input from stewardship theory by focusing on the investors' position in the relationship and examining the agent's own interest-maximizing behavior. Numerous studies, such as Barney et al. (1994) have been conducted on the venture capitalist (VC) entrepreneur (E) relationship from an agency theory perspective, where the investor represents the principal and the entrepreneur the agent. The entrepreneur can be an object of the investor's selfish behavior, yet also object to the principal's opportunistic defect, as suggested by Shepherd and Zacharakis (2001) and Cable and Shane (1997). Agency theory is a sufficiently stable and widely applicable model for economics and venture capital, but it is limited primarily to developed markets. Accordingly, for studies on increasing the effectiveness of this relationship in developed markets, agency theory appears to be one of the most applicable.

This emphasis on agency and stewardship foundations and lack of focus on networks in venture capital stands in contrast to an application in the domain of developing economies (Hoang & Antoncic, 2003). Some early work by Bygrave (1987, 1988) proposed that networks were important for U.S. venture capitalists. Recent research by Shane and Cable (2002) and Stuart, Hoang, and Hybels (1999) support this view by examining venture-funded entrepreneurs using samples of large numbers of venture capital-backed firms and a variety of other companies. Additionally, fields such as sociology (Sorenson & Stuart, 2001) and geography (Powell, Koput, Bowie, & Smith-Doerrs, 2002) have addressed the role of networks in venture capital and attest to their importance. Overall, although there is a wide acknowledgement that networks can have an impact on venture capital financing even in mature markets, the reliance on agency and stewardship theories has inhibited comparative examination of such networks in different venture capital settings.

Institutional theory specifically adds sociocultural elements that help provide an explanation of how networks and institutions impact venture capital (Scott, 2002). Institutions are conceptualized as "the rules of the game in a society" (North, 1990). They are subtle but pervasive, and strongly influence the goals and beliefs of individuals, groups and organizations (North, 1990; Scott, 2002).

Scott (2002), building on prior research efforts by DiMaggio & Powell (1991) and North (1990), more finely categorized formal and informal institutions into regulatory, normative and cultural-cognitive groupings. The most formal are the regulatory institutions, which represent the standards provided by laws and other sanctions. Normative institutions tend to be less formal, and are defined as the roles or actions that are expected of individuals. These institutions often manifest through accepted authority systems such as professional societies. Sometimes they are codified, other times they are understood practices of a profession or work function. Communities of practice in Silicon Valley may be considered normative institutions. Finally, cultural-cognitive institutions represent the most informal, taken-for-granted rules and beliefs that are established among individuals through social interactions and guide behavior. The principal means by which cultural-cognitive and less formal normative

institutions influence a society is through a community's culture (Jepperson, 1991; Scott, 2002). Citing the example of Silicon Valley, we may recall Alfred Marshall's "mysteries in the air" as a consequence of strong cultural-cognitive interactions. Institutional theory therefore argues that the similarities and differences in VC behavior around the world are the result of the configuration of normative, cognitive, and regulatory institutions in each country (Busenitz, et al., 2000, Wright, et al., 2002). This approach allows us to compare venture capital industries and companies of different types and different regions. Comparative results of this framework are presented in Tables 1 and 2 in the Appendix.

3. Silicon Valley vs. Emerging Market: Analysis and Comparison

Comparing America and Russia, we conclude that the innovative ecosystem in Russia is young and flawed, yet has ample opportunity for improvement. Through our examination of Silicon Valley and America in general, we have identified a number political, economic, social and educational factors that integrate for success in venture capital. We have also shown a number of shortcomings in the Russian system. If these issues are ameliorated, we see a bright future for the Russian venture capital and entrepreneurial environments. Given these conclusions we offer a number of recommendations for the Russian government, businesses, and investors.

Implications for Government

1. We recommend that Russia continue with the Skolkovo project, making every effort to provide the foundation for a Silicon-Valley-like cluster. The government must be careful to maintain a limited role and let Skolkovo develop organically. The network in Skolkovo should generate its own normative and cultural-cognitive institutions as it develops.
2. Construct a train line from Skolkovo to the center of Moscow. Without simple (and traffic-less) transportation to the Moscow's cultural hub, it will be difficult to draw the type of intellectual capital necessary for growth. Additionally, this transportation will facilitate a network between Skolkovo's industries and Moscow's universities.
3. The government should not favor any early stage ventures and instead allow competitive outcomes to determine the recipients of public funds.
4. The government as a rule maker should maintain a low capital gains tax to reward risky investments, tax options only when exercised, and relax the rules governing who may invest in venture capital funds. These rules may overcome Russian's aversion to risky long-term investments.
5. Avoid non-compete laws and clauses to encourage labor mobility. Furthermore eliminate barriers to mobility between academia and industry.
6. Rationalize the laws governing venture capital funds to simplify the VC process and facilitate an efficient general partner-limited partner relationship. Emulating the American Small Business Act could pave the way to a full-fledged VC industry.
7. The government must take a leading role by becoming more responsible and less corrupt. A trustworthy government that ends the practice of seizures, judiciously grants tenders, eliminates bribery as an institution, inspires trust in investors, eliminates myopia, and protects innovators from intellectual property right theft will furnish investors and entrepreneurs with an environment favorable to venture capital and entrepreneurship. This is a long, difficult road, and may require a public impetus.
8. Governmental venture firms should follow the same rules as private venture companies and avoid any administrative paths to reach their economic objectives. This is necessary to build uniform regulatory and normative institutions in industry, drawing private participants.
9. Loosen requirements for IPOs on the Moscow Stock Exchange.
10. Russia should make good on its commitment to adhere to international GATT accounting practices by 2012.
11. Encourage immigration of global management, marketing, and sales experts, especially to teach in Russian universities. The aforementioned academic-industrial mobility will organically blend these people with industry. Tax breaks, housing provisions, and competitive salaries are just a few of the possible options.
12. Facilitate the export of technological innovations to supply global corporate and private consumption. This should be simple to formulate if we assume that demand for technology may mirror demand for natural gas.

Implications for Practice

1. For Russian VC firms, domestic weaknesses should be judged not as risks, but instead as opportu-

nities to reach the appropriate international networks and personalities.
2. The basic proposed strategy for Russian funds is "differentiation" in the American sense. Funds should diversify based on the stage of business development of their portfolio companies.
3. It is vital to develop communities of practice for knowledge and skills diffusion.
4. General Partner - Limited Partner relations should be institutionalized and structured after Silicon Valley practices. Decisions about where to invest and how to manage portfolio companies should be in the hands of the general partners only. Conflict between general and limited partners hinders VC fund efficiency.
5. It is critical to promote entrepreneurs' images in society as referent role models. This will help to increase the risk tolerance so vital for VC.
6. Members of large companies should seek to communicate with or join ongoing startup projects. This may yield higher profits and will foster a venture capital lifecycle in Russia.

Implications for Research

1. Agency theory is applicable to VC in developed markets, yet is too narrow for developing markets. Institutional theory adds insights to the functioning of both developed and developing markets.
2. The institutional approach shows that variables outside the simple agent-principal model have legal, normative, and cultural-cognitive effects. It is possible to substitute networks for regulatory institutions resulting in similar performance for funds under different conditions. There is an opportunity to construct a strict measurement system for further research of VC in emerging markets.

Russia should pursue these and many other goals if it seriously desires a domestic entrepreneurial system. We contend that such a system is possible, but will require focused and rational changes from multiple sectors. A competitive Russia is in the best interest of both that nation and the world. We should see more innovation, more capital flows, more cooperation, more financial globalization, and positive benefits for consumers in all countries.

Appendix Table 1.

Institution	USA/Silicon Valley	Russian VC	Comments
Normative	*Strong normative values in industry.	*Dual normative values - industry was partly developed by the government, partly imported from the U.S.	* Normative values for governmental and private venture capital are different.
Regulatory	*Mature. *Common law provides high shareholder protection. *Strong public equity markets.	*Generally poorly developed. *Civil Law. *Laws/regulations often unenforced.	* Interpersonal more important in weak legal systems. *Networks are interchanging regulatory institutions in such a system.
Cognitive	*Status of entrepreneurs is high. *Reliance on social networks relatively weak. *Economic performance is primary.	*Status of entrepreneurs is low. *Reliance on social networks stronger than US or Europe.	*In countries where entrepreneurs have high status, the status rewards from success are high and the punishment for failure is low. * Interconnections between business people and between business and government in Russia is often much stronger than in the U.S. In the U.S, relationships may be important but the ability to produce economically is more critical to business.

Table 2.

Variable	USA/Silicon Valley	Russian VC
Business Plan	Business plan not required, but important.	Business plan required
Availability of VC funding	Abundant local VC funds	Limited
Investment Decision Process	(RELATIVELY)Fast	Relatively slow
Communities of Practice	Abundant	Limited
Risk tolerance of VCs	High	Moderate
VC proactivity	High	Low
Entrepreneur proactivity	High	Moderate
Networks	Abundant	Limited
Size of Investments	Large (AS NEEDED)	Moderate (LARGE)
VC background	Entrepreneur background	Investment background, governmental background

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Making the Vertical Horizontal: Can Internet Communities Overcome Mistrust in Putin's Russia?

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Introduction

The past ten years have witnessed a significant consolidation of hierarchal political power in the Russian government, often described as the establishment of "vertical power". According to the Medvedev administration, these changes are aimed at decreasing the costs of governance and facilitating greater domestic stability. Others, however, are skeptical that "vertical power" will facilitate greater governmental efficiency and argue that Russian government structures in their current state are more adept at producing favorable statistics than they are at carrying out their stated duties. For example, while official police statistics report that the murder rate has been continually declining over the last ten years, independent analysts have conducted research that suggest the opposite to be true.[i] The November 2010 Kushchevskaya mass murder, which captured the nation's attention for weeks, serves as another recent reminder of continued gang violence and corruption of political power that makes claims of the efficacy of vertical power seem hollow at best.[ii]

In theory, such recognized failures of the government to crack down on criminal violence and gang rule should provoke protest and demands for government action from civil society. Russian civil society, however, is notoriously weak. The development of a strong civil society requires, among other things, social capital, which political scientist Robert Putnam defines as "connections among individuals — social networks and the norms or reciprocity and trustworthiness that arise from them."[iii] The current institutional environment in Russia is anything but favorable to the development of social capital and the civil society groups that might be able to pressure the government to make good on its promises of fighting corruption, raising living standards and encouraging democratization. Russia's governmental institutions have created several hurdles that prevent civil society organizations (CSOs) from officially registering, organizing meetings and generally having any kind of influence in the country's public spaces.

We argue that the recent proliferation of Internet technologies and social networks have created tools that could help Russian CSOs bypass governmental roadblocks in order to accumulate social capital, build interest groups and ultimately challenge an unsatisfactory status quo. In this article, we will examine the importance of social capital in improving Russia's political and social climate, analyze the unique role Internet communities could play in Russia, and provide suggestions for maximizing the effectiveness of Internet tools in promoting Russian civil society.

The Essence of Social Capital

Along with the rule of law and an independent judiciary, presence of a strong civil society is often considered a necessary precondition for democratization. Alex de Tocqueville was one of the first modern political thinkers to recognize the relationship between civic engagement and the development of democracy, while contemporary political scientists, such as Jack Goldstone and Ronald Inglehart, continue to emphasize the necessity of a strong civil society to the

democratization.

The development of a healthy civil society requires a level of social capital and societal trust that Russia has not yet created. As Putnam argues, trust is integral to the accumulation of social capital that in turn promotes civil society:

> *"Trust between individuals...becomes trust between strangers and trust of a broad fabric of social institutions; ultimately, it becomes a shared set of values, virtues, and expectations within society as a whole. Without this interaction, on the other hand, trust decays; at a certain point, this decay begins to manifest itself in serious social problems… The concept of social capital contends that building or rebuilding community and trust requires face-to-face encounters."*[iv]

This trust "can arise from two related sources — norms of reciprocity and networks of civic engagement" thus social capital is both cultural (i.e. related to norms and values) and structural (i.e. tied to participation in voluntary organizations).[v] Membership in voluntary associations is of crucial importance for the development of civil society, but very few Russians belong to any kind of voluntary organization.

Obstacles to the Development of Russian Civil Society

Russian membership in voluntary organization has remained at a steady low for the past couple of decades, thus limited membership and participation in voluntary organizations can be considered a consistent feature of Russian society. The Annual Report on the State of Russian Civil Society delivered by the Public Chamber of Russia states that there are more than 360,000 non-profit organizations officially registered in Russia, however, only 38% of them are active.[vi]

The collapse of the Soviet Union initially sparked a proliferation of localized, professionalized and institutionalized CSOs, many of which relied on large foreign grants to continue their activity. The 1990s can be considered a period of relative success with regards to the emergence of Russian CSOs, at least as compared to the Soviet era. However, in the 2000s the ascendance of Vladimir Putin led the formation of a more hostile environment for CSOs. In 2006, a new law on non-commercial organizations came into force that made the formal NGO registration process much more difficult and gave the Ministry of Justice new abilities to control the activities of NGOs. The law was widely perceived as an attempt to ensure that NGOs remained at least partially under the control of the government, thereby consolidating the administration's "vertical power." Some experts including Yevgeny Volk, a specialist at the Heritage Foundation, have suggested that "the idea for this NGO law originated within the Kremlin administration in 2005... and embodies the ruling elite's fears of the 'color revolutions'... [that occurred in] Georgia, Ukraine, and Kyrgyzstan, where NGOs took the center stage".[vii]

Governmental limitations on the activities of NGOs are not the only obstacle to the development of Russian civil society. Negative public attitudes towards voluntary organizations and civic engagement also represent a significant challenge. 22% of the Russian population has never heard of an NGO or a non-profit organization (NPO) and only 20% of the population claims to have participated in any public organization.[viii] While statistics published by the Public Chamber of Russia report that almost 25% of the population has some kind of interest in becoming active in a public organization in the next three years, the current reality is that Russian participation in civil society remains extremely low.[ix] Given the historical hostility of the Russian political and social environment to traditional CSOs and NGOs, the Internet and online communities may present an alternative method of building societal trust, strengthening communities and creating a constructive outlet for dissatisfaction with the status quo.

The Role of the Internet in American Civil Society

American civil society has made extensive use of the Internet to foster dissent and protest in the American political and social arena. As Putnam demonstrates, traditional forms of civil society in America have seen a dramatic decrease in recent years. However, American civil society has seen an equally dramatic increase in non-traditional associations through the Internet:

> *"While traditional forms of civic association may be declining, technological innovations may be changing the ways in which people associate with one another… New forms of virtual civil society provide more significant opportunities for meaningful social interactions and are more functionally equivalent to participation in traditional social groups."*[x]

Traditionally, experts have insisted that physical interactions are vital for an effective civil society.

Recently, however, scholars have pointed more and more to the effectiveness of the Internet in building trust and democratic interactions. "Evidence that points toward the critical nature of face-to-face contacts in social groups for building trust, tolerance and political activity would bolster the argument that America's social capital is in jeopardy. However, evidence demonstrating that social group activity and virtual interactions both foster democratic norms and activities would support a more positive view of current trends in associational life."[xi]

Initial skepticism regarding the role of the Internet in creating social capital stemmed from the assumption that trust between individuals could only be built through face-to-face interaction. The limitations of Web 1.0 as a non-interactive and generally anonymous platform made the emergence of the Internet as a networking, community-building tool seem unlikely. However, revolutionary changes in communication technologies facilitated by the introduction of Web 2.0 now allow people to interact with one another more easily and more intensively than ever before. The new Internet, with its blogs, social networking and plethora of other services is gradually becoming embedded in people's everyday life. Individuals are becoming more and more active in these virtual communities and, needless to say, it sometimes becomes difficult to differentiate the virtual from the real, the online from the offline.

Virtual interactions have allowed Americans to interact in a way that that traditional forms of interaction could not support. There are many examples and case studies of how the Internet has allowed American civil society to foster dissent, protest and political change. To accomplish this, Americans use to social networking sites (such as Facebook and Twitter), video sites, political sites, Listservs, blogs and wikis to demonstrate their social and political activism. They also extensively utilize political blogs as a means of grassroots fundraising. A good example of an NGO harvesting social activism through the Internet is Kiva, a grassroots fundraising organization that raises funds to give out as microloans in developing countries. [xii] Americans also have rich tradition of utilizing the Internet as a form of political action. For example, in the 2006 Virginia Senate race, candidate George Allen was caught on tape calling his opponent's Indian-American videographer a "macaca", a racial slur. This tape ultimately became viral on YouTube and experts attribute Allen's election loss to the video's widespread viewing online. The efficacy of online communities in creating a forum for American political dissent, grassroots organizing and fundraising suggests that the Internet may be able to play a similarly important role in building Russian social capital.

The Internet as a Tool for Developing Russian Civil Society

Russia and other ex-communist countries are traditionally considered to lack social capital — to have a weak civil society, low levels of trust and underdeveloped norms of participation. In addition to these challenges to the development of Russian civil society, Russia also faces institutional barriers such as strict regulations on NGO registration. While the activity of traditional CSOs has flatlined in Russia, the popularity of the Internet is growing wildly. In 2000 only 2% of Russians used the Internet on a regular basis while by 2010 that figure had grown to 42%.[xiii]

Given the number of Russians that participate in online communities on a daily basis, it is apparent that the Internet has the potential to become an even more useful tool for Russian civil society than it has become for American civil society. Internet communities and social networking sites could allow Russians to build social capital in a society where trust is low and participation in traditional civil society organizations remains a rarity. The Internet, and the virtual civil society it provides access to, may well be the only tool capable of building horizontal ties in Russian society, creating a forum where people can openly discuss dissatisfaction with the status quo, and promoting the robust civil society necessary for the development of democracy.

Some political scientists, including Marcus Alexander, have pointed out that Russian Internet media and online communities could go the way of television, which is almost entirely state-controlled, and end up becoming a medium through which the authoritarian government consolidates its power.[xiv] However, the inherently international nature of the Internet and its absence of a centralized control structure makes it difficult for the government to forbid access to all sites that criticize the status quo. The only such strategy other authoritarian governments have been able to employ is blocking or censoring certain sites. For example, the Chinese government has a history of denying access to Facebook and altering Google search results. The Egyptian government temporarily blocked access to the Internet in its entirety but that was seen as an

extraordinary measure taken in response to a period of serious political instability. Attempts by authoritarian regimes to significantly limit access to the Internet have been largely unsuccessful in managing public criticism of the government and have both created international controversy and large financial losses.

The goal of our research is to evaluate Russia's virtual civil society by examining instances in which Internet media and online communities fostered political debate and pushed people to make demands on the government to fulfill its promises. In many cases, it appears that virtual civil society in Russia is more effective than traditional social organizing.

Is There a Virtual Civil Society in Russia?

For a long time, people have been trying to use the Internet for civic purposes. Numerous citizens succeed in solving their problems by making these issues public via blogs and social network services. However, until recently, it was almost impossible to reach a major audience this way. There were just a few dozen cases in which the Internet caused a real public response. For example, in May 2009, a programmer from Moscow managed to imprison the hit-and-run policeman who killed his wife and tried to evade the law. Alexei Shumm created his blog on LiveJournal.com[xv] and with help of hundreds of other sympathetic bloggers accomplished his goal. Last summer, the Internet was widely used for the coordination of extinguishing fires in the Moscow area and helping its victims. Disappointed in non-immediacy of governmental actions, people used the Internet to take control of the situation.

There are at least two cases that deserve a special attention. Apart from being booming in the Internet, they have also succeeded more or less in reaching the public offline.

The Case of Navalny and Rospil.info

Alexey Navalny, a political activist, lawyer and a minor stockholder of several state-related corporations in Russia, has become extremely popular on Internet in Russia over the last several months. Though he attracted political attention before, this attention drastically increased when he uploaded several documents to his blog on LiveJournal.com in November 2010, disclosing heavy corruption in the state-owned oil company "Transneft."

Later, he created Rospil.info,[xvi] a website where any concerned citizen can publish evidence of illegal government spending. The goal of RosPil is not just to collect information about possible theft committed by government officials, but also to introduce a real tool that can be used by citizens to fight and control Russia's notorious corruption.[xvii]

According to the Russian Federal Law of 21 July 2005 N 94-FZ "On placing orders for supplies, works and services for state and municipal needs,"[xviii] since January 2011, all information about governmental orders is required to be publicly posted on the website "zakupki.gov.ru." Though somewhat unpopular, this law has allowed people to follow governmental spending and report on suspicious activities.

RosPil aspires be the online watchdog community that prevents corruption in Russia. Since it was launched, seven orders, totaling 188 million rubles were cancelled.[xix] However, governmental tenders are just one side of Russian corruption. The prevalence of bribes and so-called "blat"[xx] in Russian society cannot be overestimated.

Nevertheless, RosPil has united thousands of people from all over Russia with a common goal of solving the societal problem of heavy corruption. Its activities take place almost entirely online and it thus serves as an excellent example of a Russian online community that has been able to play the role of a civil society more effectively than most traditional Russian NGOs.

Moreover, RosPil is one of the first successful examples of public fundraising in Russia. In one month, Navalny managed to collect more than 5 million rubles provided by more than 15 thousand people. The Russian Internet public is usually portrayed as young and educated, but politically and socially inactive. RosPil casts doubt on this assumption. In February 2011, Navalny started a political campaign "United Russia – the party of thieves and swindlers," which gained a massive support among general public and a wide variety of social and political organizations. It was aimed to spread the information about corruption in ruling party of Russia and cause people to think about voting for other political subjects in the next regional and federal elections. However, it is important to remember that, despite Navalny's fame in the Internet and his recent appearances on independent radio and press, the majority of Russian population, which receives information from government-controlled television, are likely unaware of him and his campaigns.

Nonetheless, RosPil case supports our argument that

virtual civil society has many of the same benefits as offline organizations, and it may be even more effective than traditional CSOs in Russia's hostile political and social environment. The Internet and social networks have proven themselves as a platform for political discussion and activism. As the number of Russian Internet users increases, so will their potential to influence actual political processes.

The Case of Alexey Dymovsky: One Police Officer Against the System

As opposed to Alexey Navalny, Alexey Dymovsky is not a Muscovite and he is not university education – he is an average 32 year old, Russian province police officer, who simply got tired of the chronic corruption coming from his superiors in his home city of Novorossiysk.

Alexey Dymovsky was one of the first people to manage to take a great advantage of using new media in order to draw attention to societal significant problems. Simply speaking, this policeman gave his harsh view on corruption and decay in Russian law enforcement agencies by uploading his video to the YouTube.[xxi] Many officials had to respond to this call and Dymovsky has quickly gained popularity. Since then, he has been invited to numerous shows on TV and radio. Moreover, he has created his own civic organization and gained a significant number of supporters and followers. Many people followed Dymovsky's example and drew the attention of the public to various problems.

In November 2009, he posted three videos on YouTube, which he addressed directly to the Prime Minister Vladimir Putin and claimed that the abuse of law as well as the high corruption in the country's enforcement system has been outrageous:

> *I am tired of being made to uncover crimes that do not exist.*[xxii]
>
> *I am tired of being told that these are the people who we need to go to jail.*[xxiii]

In spite of the fact that this kind of revelation could cause serious personal problems, Dymovsky confessed that in exchange of the rank of the major, he promised to put into jail an innocent person; however, his moral principles could never allow him to keep his promise. He finished his speech with a request to organize a "face-to-face" meeting with Vladimir Putin.

According to Dymovsky, pressure coming from his superiors was exerted on him at work as a result of his previous attempts to express concerns about the corruption during an annual TV-call program with Vladimir Putin in 2006. This phone call was registered, but never broadcasted. Despair, injustice and illegality forced Dymovsky to this final attempt to declare his civil position on YouTube.

To say that Dymovsky's speech resonated greatly with the Russian public is to say nothing. In the matter of a few days, about 700,000 people watched his video, and dozens of media sources cited his catchphrase – that high officers from Novorossiysk treat their subordinates "like a cattle." Hundreds of people, inspired by Dymovsky's act, posted their videos online, accusing Russian bureaucrats and high officials of corruption.

After this incident, Alexey Dymovsky was fired and accused of slander by his bosses. Russian civil society never before knew such a strong act against the system performed by an individual who was actually part of this system. After his dismissal, Dymovsky gained a great deal of popularity among Russian citizens. He became a constant guest of different TV and radio shows and also started a new social project – "White Ribbon," a non-profit organization on human rights and became a leader of one of it's branches in Novorossyisk.

In December 2009, the Committee of Inquiry, the public prosecution body of the Russian Federation, launched an investigation and began criminal proceedings against Dymovsky, according to the 159th Article of the Criminal Code of Russian Federation. Two months later, Dymovsky was accused of fraud and sentenced to prison, though he was released in April 2010. By the end of the investigation, the Court of Justice of Novorossiysk returned a verdict of guilty on the counts of slander and obliged him to pay 50,000 rubbles in compensation to two of his colleagues. In the same month, the Committee of Inquiry dismissed charges against Dymovsky due to the lapse of time and with the approval of Dymovsky himself.

Today, Dymovsky is still a national hero in the Internet world and the public discussion over his act is still active. His act has stirred people up, launched new discussions and motivated people to express their concerns and claims. This helps to prove our claim that Internet actions can influence real life processes.

Proposal

In order to support facilitating social capital both on the local and national level in Russia, we propose the creation of a particular tool for virtual

civil society. This project will serve as a forum for community building. By providing a place for people to voice concerns, we can help build an informal civil society outside of the official realm.

This project will be a "nested" website that allows Russians to connect with their peers on a national, regional and local level. There will be chat rooms dedicated to discussing human rights abuses, police and government corruption, upcoming elections, individual politicians, political parties and perhaps a few other more local community-oriented topics, e.g. the shortage of kindergartens that poses a major problem for single mothers. These chat rooms will facilitate political engagement and give Russians a forum in which they can discuss pressing political issues on both the national and local levels. Debating political, social and economic problems with other Russians will allow citizens to feel that they are not the only ones dissatisfied with the status quo, and provide a basis for building societal trust and online communities that could eventually become powerful enough to exert some kind of pressure on the Russian government.

The site will have a function that allows users to upload photos, videos or links that document abuses of power or undemocratic practices. Uploading this information will create a digital library of information demonstrating governmental inefficiencies and unconstitutional practices. This collection of digital documents will make it very difficult for the Russian government to deny any wrongdoing, as it often does, and allow Russians who previously received all of their information from state-controlled TV to gain insight into the social, political and economic realities of contemporary Russia.

This website will feature many interactive components, all designed to support open citizen-level communication about concerns in their communities and their nation. The opening screen will feature an interactive map of Russia, using Google Maps, or a similar program. Users will have the option to either comment on issues of national concern, or they can click on their region on the map and be directed to a localized area of the website.

As the primary purpose of this website is to create a web-based civil society, the website will incorporate many elements of social networking as well. There are examples of this type of website being used in the United States. Examples include seeclickfix.com, everyblock.com, and crimereports.com. By incorporating certain aspects of these types of websites into our proposed website, we can create an environment in which localized organizing and social media can create true Internet-based civil society.

Undoubtedly, this is just an initial proposal. Due to the massive costs related to support and development of the web-site and its supposed crucial importance, it is highly recommended to invite web specialists, local experts and other professionals to help the project. The Internet's penetration is rapidly growing, so, in order to create a really earthshaking project, we should work without losing a moment.

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Vladivostok: A Green Silicon Valley

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Introduction

Vladivostok is an unassuming location for a "Green Silicon Valley." With a population of a little over half a million people, it sits at the starting point of the Trans-Siberian railroad and is over seven different times zones away from Moscow. Despite its relative remoteness in context to the rest of Russia, it sits right next to China and serves as the central seaport for Russia's vast eastern region. While much of Siberia and Far East remain under developed, the confluence of unique geographic location and rich natural resources endowments makes Vladivostok the ideal location for Russia's cleantech capital. Here, we take two resources—timber and rare earth minerals—and show how better management of these resources could be extremely beneficial for Russia and the United States. We outline a strategy that details how the Russian government can turn this port city into a global leader in sustainability and clean energy. Overall, we hope to show that the development of Vladivostok is a good way to neutralize the mounting tensions between the US, Russia, and China, ensuring that the rise of China can be seen as an opportunity for global development, rather than a threat to global resources.

Background

The Timber Trade

The illegal logging trade is a fascinating study in corruption and international black markets, and a good place to begin thinking about how to reduce corruption in Russia's Far East more generally. Since the collapse of the Soviet Union and the privatization of the timber trade, Russia has struggled to protect its forests in the Far East against corruption . An illegal timber trade, facilitated most egregiously by Chinese manufacturing companies, is destroying Russia's lush forests and harming the Russian economy. Chinese manufacturing companies routinely contract with Russian logging companies in a clandestine and illegitimate exchange of raw trees, which are taken to China and turned into products that are resold to major companies internationally, the largest importer of these wood products being the United States. The Russian Federal Government, independent NGOs, and groups in the United States have all tried independently to stop the illegal trade, eradicate corruption, and create a more sustainable system of trading timber. However, these efforts alone have been unsuccessful. Russia now currently has some of the strictest legislation in the world on deforestation, yet maintains relatively little control over its forests; while this may seem surprising, it is a common occurrence in cases of deforestation.

Commonplace or not, the illegal logging trade poses enormous problems for all players involved. A study published by the World Bank reported that illegal logging on public lands costs the government $10 billion annually in lost assets and revenues, a figure more than six times the amount of aid Russia receives to help protect forests. Furthermore, by shipping logs out of the country, Russia is also exporting tens of thousands of jobs that could have otherwise gone to Russians if the logs had stayed in Russian factories. As Vladimir Putin noted, "our neighbors continue to earn billions of dollars relying on Russian timber."

However, the trade is not only problematic for Russia, but is of great global concern. According to an expose run by the Washington Post, at the current pace of cutting, natural forests in the Russian Far East will

be exhausted within two decades. This is problematic for two reasons: first, forests are a bulwark against global warming, capturing carbon dioxide that would otherwise contribute to heating the planet. Thus, deforestation in Russia is a threat to ecology worldwide, making regulation of forest use a matter of international responsibility. Second, if the forests are depleted, China will no longer have the sources of woods it needs to produce in the ever-growing market it has created. Supply will plummet, demand will skyrocket, and the global economy will face extreme instability and turbulence.

NGOs, alongside government campaigns in Russia, have tried unsuccessfully to implement certification programs domestically. These certification programs are run by the government, and the documents are easily falsified with no infrastructure in place to issue punishments for infractions (in the entire history of the trade, only one man was ever arrested for illegal logging and he served only four years in a state penitentiary). Governments are hesitant to accept certifications by other governments or NGOs because they fear it will infringe on the sovereignty of the nation.

It is important to note that China still depends heavily on the west for trade. From 1997 to 2006, manufactured exports from China of forest products to the US increased 1000% and to Europe 800%. These are the real market drivers, and for China to lose these markets would not only be devastating for its domestic economy, but to the stability of global trade as a whole. Therefore, understanding its position of leverage, governments and business bureaus in Northern America and Europe have issued legislation in the last several years attempting to respond to the trade and attempt to prevent it using consumer power. The Lacey act, for example, was formed at the urging of a coalition of the US Forest Products Industry and the US environmental community to get the government to weed out illegally harvested timber from entering the US. They specify that importers must show due care in choosing their imports, and that all wood must be of a certifiable origin to enter the United States, with a very hefty fine accompanying any infractions. In Europe, Voluntary Partnership Agreements (VPAs) have allocated funds to help with better forest governance and established the European Forest Institute, which was given the charge of maintaining Europe's relationships with loggers. The coalitions already existing in the West will prove useful in our proposal, however as they stand now they are ineffective. The illegal trade is so deeply entrenched, that regardless of how hard a business might try to verify their wood, it is nearly impossible. The wood may travel through as many as 40 hands before it reaches the West, with incomplete and purposefully falsified documents as its only accompaniment. There must be more in the way of litigation to end this trade and promote sustainability in the long-run, and this will be the subject of our proposal section. Only once this type of institutionalized corruption is effectively eradicated can a healthy development of Vladivostok take place.

The Key to Cleaner Energy: Rare Earth Elements

The United States is on the cusp of a clean energy revolution, but it has only recently started formulating a national strategy to secure the critical minerals required for such an energy revolution. The minerals are used in everything from wind turbines, electric vehicles, solar cells, and energy efficient lighting. Widespread deployment of these technologies will increase worldwide demand for rare earth elements and certain other materials. Rare earths also have significant applications in the areas consumer electronics and defense. The concern is that at present, more than 95-97% of production for rare earth metals is currently done in China. China's commerce ministry in January recently slashed first-half quota by 35 percent from the same period last year after cutting second-half 2010 exports quotas by more than 70 percent. Prices of some rare earths up more than 1,000 percent since March 2010.

China's recent behavior is likely due to heightened environmental standards, which constrict production and the desire to retain minerals for domestic production of finished clean technology products, which are far more valuable than exporting raw materials. China says its reserves might run dry within 15-20 years if the current rate of production is maintained. The restrictions benefit domestic firms and forces foreign companies to produce more high-technology products within the country. China also has used rare earths as a bargaining chip with rivals like Japan as seen during the recent territorial disputes. Even tighter limits on production and exports, part of a plan from the Ministry of Industry and Information Technology, would ensure China has the supply for its own technological and economic needs, and force more manufacturers to make their wares in China in order to have access to the minerals. Western governments and multinationals alike worry about the possibility that exports will be further restricted.

Russia is economically dependent on its vast reserves of oil, natural gas, and coal, but there are also significant sources of renewable energy in its remote regions. For example in Western Siberia, Lake Baikal, and Kamchatka region, lay vast amounts of geothermal energy. The Sakhalin Islands, Southern Kamchatka, the Chukotka Peninsula, along with the Vladivostok region all have significant wind resources. Southern parts of Siberia and the Far East have Russia's best solar insulation rates. Siberian's rivers are operating at only at 20% of their electrical capacity, and the Far East is only at 5% capacity.

Alongside its potential to be come a renewable energy giant, Russia also has world's second largest supply of rare earth elements, a group of elements critical to the production of renewable energy technology. But the abundance of renewable energy resources and rare earth elements has not translated into any significant success in the clean technology field for Russia. One of the main reasons is the remote nature of these renewable resources and the difficulty in building high capacity power lines. Another is the huge lead U.S and Chinese companies have in manufacturing and R&D. In solar, wind, and battery technology, Russia's fledgling renewable industries will have a difficult time catching up with its global rivals in terms of technical sophistication and cost.

Given the trillion-dollar size of the future clean energy economy, Russia must do something to keep with leaders like the United States and China. To do this it needs to concentrate on formulating an industrial policy that leverages Russia natural endowment into a cleantech sector in the early stages of development.

Proposal

From the sections above, it is clear that Vladivostok has a huge potential to succeed as a new cleantech sector and trading hub. The achievement of a healthy development of Vladivostok would ensure a more equitable and stable relationship between the US, Russia, and China, alleviating the trade asymmetries that might cause the rise of China to be viewed as a threat, rather than an opportunity. However, due to rampant corruption throughout the Russian Far East, the development of Vladivostok will not be simple. Here, we outline a two-step approach that deals first with corruption—using the timber trade as a case study—and second with the mechanics of development.

Step One: Reduce Corruption and Increase Cooperation on International Monitoring

Corruption, as outlined in the forestry section, is a great threat to Russian development and cooperation between the United States and Russia, specifically concerning the rise of China. Therefore, before outlining plans to develop Russia's Far East, we use the illegal timber trade to outline a more general plan to help eradicate current corruption and safeguard any new developments against corruption.

One key element of our approach to reducing corruption is an understanding that legitimate coalitions of support matter, especially in the effort to weed out illegal logging from global supply chains, and thus paying attention to the preferences of powerful (or potentially powerful) coalitions is a key first step. Currently, global coalitions for support of weeding out global markets of illegally harvested timber are very large. Every legally harvesting company in the world has an interest in doing this, and every North American or European country has an interest in eradicating illegal timber, since for both, weeding out supply will increase prices by large percentages in the short run, and will create a more legitimate and overall profitable market in the long run. Global prices overall are deflated by as much as 15% according to World Bank Reports; thus any company harvesting wood and selling it legally has the potential for a 15% increase in revenue if not more. In addition to simply logging businesses, governments (like the Russian Federation, the United States, and even in some ways the Chinese) have an interest in promoting legitimate trade, since legality verification (i.e. adherence to government base-line rules) reinforces good governance efforts domestically. Special interest groups, like environmentalists and human rights activists, also have an interest in ending the illegal trade.

Thus, it is clear there are many different coalitions all with the potential to put pressure on the trade, but not yet the agency or the legitimacy to affect any real change. What, therefore, is the way to create a durable coalition across diverse interests? What is the mechanism for creating a broad coalition? The answer, we argue, is supply chain tracking of products along complex webs. There are many different ways to track resources; the main approach we advocate is independent third party certification. This third party certification is best understood by breaking it down into a three-step process:

First step: Create the proper incentive struc-

ture with credited, third party audit systems that issue certificates coalescing into one determined global standard. As made evident in the previous two sections, strict international certification requirements have not worked due to lack of technology and infringement on sovereignty. These third-party auditors should not exist for the sole purpose of giving legal harvesters market access; ultimately, they must give governments better tools to run their forests, helping them flip the scales with short run investments that can help governments with resources, management plans, and the technical aspects of forestry that are severely lacking in this trade. For governments, it is more than simply a moral calling that would incentivize them to use these audit systems; for the timber trade, with the expansion of the Lacey act it is now more crucial than ever that China and Russia secure legitimate footholds in these markets. Thus, for Russia, procuring third-party certification systems, while they do support private authority, do so in a way that helps reinforce domestic sovereignty over forest policy, which is a desirable outcome for Russia's federal government. For China, though the incentive is preventative rather than positive, adhering to this new policy of third-party auditing will shortly become the only way it can maintain its markets in North America and Europe, otherwise it will lose out on this trade to the newly empowered Russia. This places Russia, China, and the US firmly in a healthy competition with trade that can then follow appropriate market forces, removing the unhealthy trade asymmetry.

The second step in this process is the implementation of repercussions for false certificates. These third party audit systems, currently highly developed in the United States and eager for business, have access to a plethora of exciting technologies that allow certification to take place as it has never been possible before. With the combination of satellite technologies and DNA testing, these third-party systems can take small DNA samples of wood imported anywhere in North America or Europe (a process that the expansion of the Lacey Act and the VAP would eagerly ascribe to) and go into any supply chain and find where the wood came from. The documentation of wood in Russia's forests has already been completed as the result of years of partnership with the US Forestry Service. The major consumers of the timber are North American and European companies, and with the expansion of the Lacey act and VAP, the fear of being caught with bogus certificates far outweighs the benefit of contracting with illegal loggers. Thus, if a logger or region has been blacklisted by one of these certificate investigations, the importing company will never purchase its materials from there, and thus that illegal logger loses almost his entire market. This is incentive enough for both parties to ensure that wood is legal, and coming through legitimate channels. Finally, as a third and final step, once supply chain tracking is firmly in place, we can begin to shift the centers for forest resource management from Moscow to Vladivostok. With the aid of third party-audit systems (which could be given incentive to relocate to Vladivostok, as well), Vladivostok is better positioned to monitor and administer certificates. As Vladivostok develops, we encourage the Russian government to set up a system for its timber whereby all logs must be routed through Vladivostok for certification before crossing the border to China. This would ameliorate discrepancies between border stops and help reinforce the status of Vladivostok as a true trading hub of the East.

It is with this three-step approach that we believe the illegal timber trade can be eradicated and the development of Vladivostok can be secured against this type of institutional corruption. This approach is effective in the eradication of many types of corruption, not just the timber trade, and could be used to ensure the proper trading of rare earth minerals as well. Overall, the replacement of the trade with a healthy market driven by real market competition will contribute greatly to the reduction of trade asymmetry between the US, Russia and China overall, and will set a positive standard for sovereignty with cooperation, and coalitions that respect borders.

Solution two: Developing a Cleantech Industry in Vladivostok

With vast rare earth reserves located to the north and a strategic gateway for both the U.S. and China market, Vladivostok an ideal place for Russia to build a "Green Silicon Valley". It can be a city where talent and resources from around Russia, and neighboring nations like the United States, China, and Japan could work one of the most ambitious renewable energy projects on the planet.

The key to this cleantech development strategy lies in the Tomtorskoye deposit, which is located in the Northwest of the state of Yakutia . This vast deposit contains huge amounts of the rare element Yttrium . Yttrium is highly prized on the global marketplace be-

cause of its role in making energy efficient lights, fuel cells, wind turbines magnets, and high capacity batteries work . However the most tantalizing use of Yttrium is when it forms the compound YBCO ($YBa_2Cu_3O_7$). When YBCO is cooled by liquid nitrogen to around 90 Kelvin, it becomes superconductive - a state where electrical resistance becomes zero. Electricity can flow with no loss of energy over long distances on this superconducting material. This is a radical improvement over today's modern electrical transmission lines, which lose up to 6.5% of total electrical energy produced . Superconducting electric transmission lines can carry 100 times the energy of traditional AC and DC power lines through a far smaller medium . Without the need for steel towers several hundred feet tall, these transmission wires can be safely piped under the ground, thus making them unobstructive to the environment or the urban landscapes while also remaining safe from the harsh elements of nature. Other than the cost of providing liquid nitrogen, which is cheap to produce in large quantities, there are fewer maintenance costs compared to massive overhead electrical cables. All of these characteristics make the high temperature superconducting electrical wire the ideal transmission platform to connect wind, hydro and geothermal resources in the extreme harsh and remote corners of Russia with users many thousands of miles away.

Since there is amazing potential in this technology, and with the eradication of corruption through cooperation on the timber trade, Russia can begin to kick start its development. The creation of this new industry and energy system requires infrastructure development on a massive scale. We now propose three stages of development for this sector:

The first stage will be to initiate mining in the Yttrium from Yakutia, processing the element from the ore locally, and then delivering it to manufacturing centers in Vladivostok. The main challenge in this stage is to create a governance structure that incentivizes environmentally friendly mining and processing practices along with building a more robust transportation network.

The second step would be the construction of state of the art superconductor fabrication facilities in Vladivostok that will create the YBCO wiring, along with additional shielding and liquid nitrogen cooling systems. This requires very advanced technology, but pilots in the United States have shown that such technologies will work and manufacturing partnerships with American firms can allow production to start quickly in Russia. Given the still nascent stage of the technology, the creation of a joint superconductor and grid R&D research centers are necessary to further spur further innovations that can lower cost and increase capacity. The large scale of production and accompanying R&D costs would also necessitate Moscow to heavily subsidize the construction of manufacturing and research facilities.

The final portion is the most difficult and will involve more than technological know how, but diplomacy among with the other great powers. As these superconducting transmission wires eventually roll off the manufacturing lines, they can be combined into a thick trunk line that will be capable of handling over a hundred Gigawatts of energy. That amount of electricity can power hundreds of millions of homes . The most ambitious aspect of superconducting electrical technology is the idea that it can resolve a key hurdle for mass adoption renewable energies like solar - the disconnect between locations when there is excess supply of energy (e.g. sunny afternoon in the deserts of North America) and locations with chronic energy supply crunch (e.g. evenings in Chinese megacities). With a superconducting transmission line can solar energy from California of the world to power street lamps in China.

Vladivostok is the ideal starting point for a global electric network given its central location between the American, European, and Asian markets. The three destinations are ideal candidates to be the main points of connection. First will be Moscow, which is designed to serve the Western Russia market along with Europe. Second and fastest to completion would be the Beijing connection, which is designed to operate with the massive China market and eventually the rest of South and Southeast Asia. The most ambitious portion will be the U.S. connection, as it will have to cross the 60 miles under Bering Straight from Russia to Alaska.

Current estimates in the U.S. are $8 - $13 million per mile of superconductor transmission lines. Using these numbers, one can derive that the Beijing connection should cost fewer than 10 billion dollars to complete, though negotiations with the Chinese government can complicate this portion. Moscow connection at over 5000 miles could cost around 40 billion dollars, but it can very quickly start serving the populated centers of Russia and Eastern Europe. The American line will be the most expensive as involves

crossing the most difficult terrain on both continents. This portion also will have to get significant U.S. buy-in and investment for it to be viable.

Despite the costs, building this project will undoubtedly push Russia into the leading edge of the clean energy space and help the nation reap immense profits as a global electric distributor. With the right policies, Russia can turn its current puzzle pieces like the remote renewable energy resources, untapped reserves of Yttrium, and the lack of a cleantech sector into a coherent policy to build a revolutionary global energy transmission system. The key ingredients to make it work are aggressive investments to centralize talent and manufacturing capabilities in Vladivostok, and increasing energy cooperation with the American government and U.S. cleantech companies.

Conclusions

The rise of a developing country should never be seen as a threat. It is in our power to make tangible modifications to the current system to ensure that prosperity for some does not spell disparity for others. We have in our hands the ability to ensure that the rise of China is seen as an opportunity, and not as a threat. However, this requires a great deal of cooperation and of sensitivity towards many issues that are difficult to quantify, such as human rights, climate change, sovereignty, and good governance. We thus proposed a two-part solution that we believe is inherently sensitive to those issues that might derail it, and that can effectively use to combat the trade asymmetry and promote cooperation in this age of opportunity.

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The Roots of Violence: The Effects of Insecure Land Tenure Property Rights in Afghanistan and the North Caucasus

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Objective

Today more than ever, it is clear that stability and security in conflict areas cannot be established by force alone. Regional violence has social, economic, and political roots, which even powerful intervening states find difficult to control through military means. The United States and Russian Federation presently face such challenges of creating and maintaining a stable and secure Afghanistan and North Caucusus, respectively.

In Afghanistan, a stalemate between NATO and Taliban forces persists, despite President Barack Obama identifying a peaceful and secure Afghanistan as the main foreign policy priority of the United States, and his having dramatically increased U.S. troop levels in the country since 2009. Acts of terrorism and violence remain widespread, particularly in Pashtun tribal areas in the south and east of the country. Meanwhile, the notionally illicit production of opium has exploded and is the prevailing force in the Afghan economy. The government of Afghanistan is not able to establish legitimacy much less security throughout the clear majority of the country. In this context, the possibility that the United States may at some not too distant point withdraw forces from Afghanistan raises the specter of a full-fledged civil war and the return to power of Islamist elements.

The situation in the North Caucusus, notwithstanding the cessation of open war in the Chechen Republic, is also grim. Per the official statistics of the Interior Ministry, the incidence of terrorist acts in the republics of the North Caucusus has grown several times over the last ten years, including a spike within the last three years. The rise of religious extremism in the Republic of Dagestan, Republic of Ingushetia, and Kabardino-Balkar Republic has awoken a terrorist underground, which has sought to challenge government at all of its levels. The enactment of counter-terrorism policies, including so-called sweeps and pre-emptive strikes by peacekeeping forces, seems to have only exacerbated the situation. Aside from terrorism and religious extremism, the region is afflicted by high criminality, a significant propensity for ethnic violence, and a pervasive second economy. Moscow's recognition that violence in the region would not be solved by force alone was signaled in January of 2010, with the inauguration of the North-Caucasian Federal District and the installation of the accomplished Alexander Khlophonin as the President's special envoy. The regional development program Khlopinin has articulated stresses economic factors for alleviating violence, including the expansion of tourism, development of infrastructure, and technological innovation. At the same time, many fundamental problems are underrepresented in the program.

A comparative analysis of the difficulties faced by Afghanistan and the North Caucusus region makes it possible to isolate common causative factors – and also to develop a series of policy proposals to counter them. It is true that the Islamic Republic of Afghani-

stan is a sovereign country and the Republics of the North Caucusus subjects of the Russian Federation; however, it is impossible to ignore the many characteristics they share. Weak administrative institutions, the absence of the rule of law, corruption and graft, high indicators of poverty, inequality and unemployment, a prevalent black market, ethnic conflict, and terrorism directed against governing institutions – these factors among others are common to the basic realities of Afghanistan and the North Caucusus. The similarity of the social environment affords the opportunity for a fruitful comparative analysis and practical policy recommendations.

The basic hypothesis of this study is that one of the main factors of violence in both Afghanistan and the North Caucusus is the insecurity of land tenure property rights (LTPR). It occurs that studying violence through the lense of LTPR allows for a unique ability to address and potentially resolve the effects of many other factors including migration, unemployment, landlessness, and ethnic conflict. In order to begin unraveling the multitude of factors and problems affecting these regions one ought to begin at a root cause. Likewise, it serves to look toward established theory.

Theoretical Framework

The decisive role of property rights in economic and political development was originally expounded by Nobel Prize-winning economist Douglas North. North (1981) and other economists who have laid the basis for the conception of a liberal property rights regime (Alchian, Demsetz, 1973) and have shown that security of private property stimulates growth and well-being through increased production and investment by mitigating uncertainty and risk. Further, the renowned economist Hernado de Soto (1989) has proved the merit of this theoretical structure in reference to a particular case-study, employing a wide base of sources to show that the cause of poverty, stagnation, and lawlessness in his native Peru had roots in the country's inchoate system of property rights law and, particularly, property rights over land. De Soto's book The Other Path, subtitled "The Economic Answer to Terrorism," unambiguously illustrates how the free market, which is based in the defense of property rights, contributes to the elimination of instigators of violence from the social base. These results are relevant to Afghanistan, with its "Opium Economy" as well as to the North Caucusus, where bureaucratization, corruption, and the lack of social mobility push people into the black market or, further, to pick up arms.

An alternative approach to the problem, which can be characterized as the "statist" approach is based in the idea that the free market, privatization of land and other prescriptions, which describe "liberal theory" do not sufficiently take into account the social context of developing countries. This line of reasoning holds that the privatization of land will only arouse new conflicts and in the final result will cause growth in the bureaucratic apparatus and associated criminality. Western principles are well and good for the West, but their blind application to non-Western societies is likely only to complicate local problems. The government must play a relatively more important role in combating violence than the private sector. It is on this key element that the theory of modernization is based: the theory which Russian leadership has latched on to in its search for a panacea. According to this logic, embodied for example by the North-Caucasian Federal District Development Strategy until 2025 (Khloponin's strategy), the government must facilitate the development of infrastructure, attraction of investment, and stimulation of innovation. Given this, the underlying social structure, which is expected to modernize, is not given much attention. This lapse also characterizes the third – far less known approach to the problems of development and establishment of property rights.

The third possible approach can be referred to as the "communal" – that is, reliant on the local community. The practical strengths of this approach were demonstrated by the 2009 Nobel laureate Elinor Ostrom, its chief pioneer. Based on an analysis of a great breadth of empirical data, Ostrom (1990) showed that for the development and management of resources, among them land, there is an alternative strategy to the "invisible hand" as well as the "Leviathan." This third way exploits the decision-making capabilities of those who have lived together for centuries. The Fishermen of Turkish Antalia, shepherds in the Swiss Alps, among other societies, illustrate the potential of local institutional organizations for creating peace, stability, and development. Per Ostrom, the factors of a successful local institutional organization are 1) the establishment of communal property and its fair use, 2) the clear demarcation of boundaries, and 3) the participation of all members of community in the decision-making process

With the aid of these three theoretical frames,

we further examine the problems of Afghanistan and the North Caucusus.

Methodology and Empirical Analysis

In order to evaluate the connection between the defense of LTPR and violence in Afghanistan and the North Caucusus it is vital to, first, establish concepts, then to analyze given data, and, finally, to evaluate the situation still more carefully using case studies.

Our main category of research is violence. Because "violence" is an especially broad concept that can include many social phenomena, it is important to clearly define this term as we use it. Indicators of violence that we have identified include terrorism, armed conflicts between law enforcement and gangs, political assassinations, the clash of ethnic or religious groups, as well as mass fighting employing weapons.

The chief variable of the present study, the ownership of land, is determined by various characteristics. Important factors include the level of inequality in land ownership and the supply of land in general. Alternative variables included in the analysis are poverty, inequality, unemployment, and ethnic and religious diversity. Unfortunately, the quality of statistical data both in the case of Afghanistan and the North Caucasus is poor (data are either not available or do not correspond to reality). Therefore, in our statistical manipulations, we have had to construct the indicators manually. Nevertheless we can make some preliminary remarks on the situation in the North Caucasus.

Table 1:

The Effect of Various Factors on Frequency of Conflict in the North Caucusus

Dependent variables: Conflict Scale (ordinal) and Conflict Category (nominal)[1]

FACTOR (*italics* = significant)	Conflict Scale	Conflict Category	Interaction
Rural vs. Urban	.44	.22	no
Refugees & Displaced people	.21	.10*	Partial
Land Conflict Linked	.72	.00***	Yes
Coincidence with Elections:			
- federal	.98	.66	no
- *regional*	.99	.03**	Partial
- local	.5	.86	No

N=167; Likelihood ratio $X^2 = 49117585$; *p ≤ .10; **p ≤ .05; ***p ≤ .01

As we can see from our preliminary analysis, the model that optimally describes the probability of large-scale and low-organized violent action includes, first of all, conflicts over land claims. Coincidence with regional elections and significant number of refugees and displaced people substantially worsens the situation.

To further evaluate our analysis and policy proposals, we have also surveyed a series of experts. For both regions we selected a pool of academics who were asked to fill out a standardized questionnaire focused on the overall situation in the region in which they specialize. The questionnaire further asked the experts to evaluate the prospective effectiveness of various policy prescriptions. Findings from this survey helped assess the relevance of the LTPR issue, the social dynamics of the situation in the studied regions, and the effectiveness of proposals to address the land problem.

Afghanistan and the North Caucusus: The Social Context

Afghanistan and the North Caucusus region are of course party to their respective pasts. It is the common elements among their histories, however, that explain the prevailing violence in these regions. Both regions have experienced imposed external influence. In the late 19th century Afghanistan served as a buffer between the British and Russian empires and ultimately fell to British influence. Afghanistan achieved independence in 1919, but in 1979-89 was occupied by the Soviets and, presently, maintains an extensive American-led NATO troop presence. The North Caucusus was subjugated by the Russian Empire through the middle part of the nineteenth century

and the region achieved nominal autonomy in Soviet times. Within the Russian Federation North Caucasian Republics are also have autonomous status. In both cases, the colonizing process imposed artificial borders, usurped established power arrangements, and attempted, but failed, to crowd out indigenous culture.

Both Afghanistan and the North Caucusus do have somewhat recent histories of stability. Through the middle part of the twentieth century, Afghanistan enjoyed the stable forty year reign of King Mohammed Zahir Shah, who was deposed in a bloodless coup six years before Soviet occupation touched off more than thirty years of active war. A rare example of a policy successfully reducing concentration of land ownership stems from this period – a sharply progressive tax depending on the size of land holdings enacted in the mid-1970s under the moderate president Daoud. This policy was enacted just prior to more forced redistribution schemes after the Socialist coup and subsequent Soviet occupation.

The North Caucusus region was a stable and integral part of the USSR for most of the Soviet period (the most notorious exception is brutal deportation of several Caucasian peoples, including Chechens in 1944). While it had not previously been a uniquely agrarian region of the USSR, the North Caucasian Republics failed to see urbanization and industrialization on the same scale as the rest of the Russian Soviet Federative Socialist Republic in the latter half of the 20th century and, by the end of the Soviet experience the region was more agrarian than even the Central Black-earth Region, Russia's historical bread-basket. As Soviet power weakened, ethnic politics in the region regained salience and the final dissolution of Soviet authority opened the flood gates of ethnic strife. The same process reigned in Afghanistan after the fall of the Communist Najibullah regime in 1992. In both cases, the emergence of a power vacuum due to historical processes exogenous to the region resuscitated old political bodies; meanwhile the fault lines between them had changed significantly over the years of stability. The result in either case was the unfortunate, but likely one: social upheaval.

There is an open question of how to define the present situation in these regions. Surveyed experts agreed that Afghanistan is in the throes of a civil war and that the situation has worsened sharply in the last five years. Opinion was more mixed in the case of the Caucusus. The majority of experts referred to the North Caucusus as "generally unstable," though two went so far as to opt for "civil war" to describe the fighting. There was more division as to whether the situation in the North Caucusus is improving or worsening. A majority of experts felt it has moderately worsened in the last five years, two that it has improved, and one that it has steeply worsened.

All experts agreed that the main source of violence and instability both in Afghanistan and the North Caucasus is weak governing and administrative institutions, which fits with literature on the subject (Laitin, 2007). Still, there are important distinctions between the two regions. For instance, in the North Caucasus, repressive functioning of the security apparatus is widely recognized a key determinant of violence. When asked to evaluate the given region's most pressing concerns, the experts chose poverty, the dominance of power brokers, an effective and well-resourced insurgency (Ben Rowswell's point), corruption and insecure LTPR for Afghanistan and the rise of religious extremism, clanship and corruption, insecure LTPR and unemployment in the case of the North Caucusus. The most frequently cited factors common to both regions are corruption and insecure LTPR – this fits with the analysis of this paper and, moreover, is unsurprising given that the two feed off of each other.

Further, our experts were skeptical as to the existing framework for reform in both regions. The Afghan National Solidarity program was condemned to failure by all experts, though there was disagreement on whether it was wisely formulated. Likewise, all experts were pessimistic about envoy Khloponin's development strategy for the North Caucusus, most going so far as to say it was misguided, ignoring many important factors in to account and likely to fail for this reason.

Land and Violence: Theory and Comparative Perspective

Throughout human history, land has been both the basic resource enabling man to make bread and the greatest reason for him to make war. Ever since the advent of social science, academics have wondered how to ensure that the earth bears fruit in abundance and does not lead to war. The broad answer to this puzzle is the maintenance of a secure LTPR regime.

Secure property rights lead encourage prosperity owing to the increased incentive to invest, offer credit, employ, and accumulate capital – human and otherwise (Besley, 1995; Galiani, Schargrodsky,

2010). Lack of land ownership or insecure LTPR, spells the absence of the proper incentives for individuals to act in their otherwise rational economic instinct. If tomorrow you may lose your plot, what incentive is there to cultivate and improve the soil, etc.? In conjunction with the lack of access to credit, such a stasis leads to the concentration of land in the hands of a very limited circle of persons with wealth and power potential – commonly referred to as "elites" in political science. This, in turn, leads to even greater growth of poverty, inequality, and illegal economic activity and strengthens the dominance of the elites. In addition, the land issue may bolster migration, which further increases the demand for land. Finally, the failure to resolve the question of LTPR undermines the legitimacy of the state and increases the discontent of its citizens.

There are several channels through which the vulnerability of land ownership leads to violence. These include the growth of organized crime and sectarian conflict. First, landlessness, poverty, and unemployment make it easier to recruit into the ranks of criminals or insurgents. Second, the unresolved land issue serves to incite already established political actors to seek their own purposes through communal or inter-ethnic violence. It is possible to provide numerous examples where incomplete and failed land tenure reforms were a source of populist discontent and subsequent revolt: Mozambique, Zimbabwe, Guatemala, El Salvador, and Peru all serve as examples where discontent over land tenure and ownership was a significant factor in popular support for insurgents. Conflict over land ownership and distribution has also played a significant role in fueling recent conflicts in Nepal, the West Bank/Gaza, Sudan, Kenya, and Uganda. It thus becomes clear that the government, if it is concerned with more than its own enrichment, should provide a clear definition and protection of LTPR.

In Afghanistan, outright landlessness is a very urgent issue. Land is distributed very unequally and there is high level of uncertainty in land ownership and tenure. The shortage of land is primarily a natural given, however there are social and political factors which exacerbate existing land shortages. First of all, traditional rules of inheritance are based on the norm that every son should receive an equal plot of land, leading to continuous and ever-increasingly impractical fragmentation. Second, property rights for land are weakly institutionalized and local power holders misuse administrative and coercive capacities in order to accumulate land. Finally, communities and farmers who have neither support nor protection from the local power holders become especially vulnerable to expropriations. According to Wily (Wily, 2003), "landed property issues in Afghanistan are deeply intertwined with both continuing instability and slow recovery and reconstruction." Though many observers do not consider land issues in Afghanistan a primary driver of conflict, this should be treated foremost as an oversight.

There are three main problems that make insecurity of property rights an essential source of violence and instability in Afghanistan: first, the resettlement of internally displaced peoples and refugees; second, conflicts over pasture in the central highlands between different ethnic groups; third, competition between warlords over land within the context of opium production. (USAID, 2006). Land is the leading cause of civil dispute in Afghanistan and the legal system has been reworked, creating a special channel for such cases. An infrastructure for mediation outside of the courts is particularly promising. Unfortunately, the legal system to a large extent remains a means for powerful interests to muscle out smaller, less experienced landowners who are unfamiliar with the law and incapable of paying legal costs.

Unfortunately, the Afghan Government has neither the coercive nor distributive capacity to provide comprehensive land titling or to secure property rights over land. The government is using statutory law to lease and sell lands, following customary claims, and in result is fueling tension between the state and citizens. In contrast, the Taliban is building its rural support by usurping the role of the central government in administering and adjudicating land tenure and ownership. In addition it expropriates the property of rich landlords, distributing it among the poor. What is more, the Taliban is filling the void in governance by dispensing Sharia justice to mediate tribal and land disputes.

In the case of the North Caucusus, the land problem came to be of critical concern after the collapse of the Soviet Union. Facing severe land shortages, a high level of demand, and the complicated social, ethnic and legal structure of the North Caucasus, the Russian Government in the early 1990s enacted a moratorium on land privatization. However, in a short time, land was occupied and de facto privatized by both bureaucracy and mafia, leading to a concentration of land ownership and the absence of de jure property

rights. In the North Caucasus, especially in Dagestan and the Kabardino-Balkar Republic, this fed poverty, unemployment, inequality, and widespread corruption among power elite. This in turn has provoked the rise of discontent, a sense of injustice, and the rise of Islamist movements and support for insurgency.

In both cases, the fragility of property rights over land was exacerbated by ethnic claims. In Afghanistan it was expressed in violent conflict between Hazara people and Pashtun Kuchi over pastures and access to water in Baman, Wardak, Dayikuendi and Ghazni provinces. In the North Caucasus the most troubled regions have been Dagestan, where mountainous ethnic groups Avars and Dargins, are in perpetual conflict over pastures and agricultural land with valley peoples, Kumyks, and the Kabardino-Balkar Republic, where there is intrinsic conflict over lands between the two titular ethnic groups. Intensive internal migration exacerbates this problem (Fearon and Laitin, 2011).

Both in Afghanistan and the North Caucasus, there is a highly confounded system of land ownership and tenure, customary law, private ownership and public land. In addition there are overlapping jurisdictions, serious legal gaps and controversial claims over land distribution. To mitigate the problems one needs to provide comprehensive land titling and transparent privatization of public land.

Although land reform both in Afghanistan and the North Caucasus is absolutely indispensable, its implementation as well as organized resistance to it could even engender more violence. Policy-makers must first do no harm. Reforms need to be enacted comprehensively and based on principles proven to be most efficient for the local context.

Policy Proposals

In order to develop a set of actionable policy prescription aimed at addressing the problem of insecure LTPR in Afghanistan and the North Caucasus, we asked a battery of regional experts to assess a series of proposals emanating from the main theoretical approaches developed above. Considering the very complicated social background and volatility of these regions, we focus on political feasibility as the criteria for our policy recommendations.

The first set of recommendations is relatively broad and relates to the formulation of the problem, to its study and an evaluation of its relevance. Here, the experts evaluated the wisdom of including LTPR on the political agenda in the context of a long-term development strategy, the proposal to enact the registration and titling of all agricultural land, and the notion of piloting land reform projects in selected communities to evaluate their effectiveness.

The majority of experts supported these initiatives. Denis Sokolov, who is specializing on land issues in the North Caucasus, assigned the highest possible score on all three counts. At the same time, there were also skeptics. For example the suggestion to complete a land titling program in Afghanistan received the lowest score from Alexey Malashenko, who defended stressed that the proposal was rendered meaningless because it was not realizable.

Overall, however, our experts confirmed the urgency of the problem and outlined general support for the initiatives to address it. Ruben Enikolopov and Fotini Christia, who conduct field research in Afghanistan, strongly supported the proposal to use pilot projects to evaluate the effectiveness of various reform programs. To this end, we recommend that the governments of Afghanistan and Russia (with support from international organizations such as the World Bank) conduct randomized experiments - that is, randomly identify dozens of communities (municipalities), pursue a set of different reform agendas across them (being sure to evaluate a control group) and compare results after some time. This would provide for a much more optimal template for future reform, leaving obsolete the present haphazard approach, and even this very study. Noteworthy, there is also critical view on this proposal: according to Ben Rowswell, pilot projects have little credibility in Afghanistan, as they feed into concerns Afghans have about international projects being temporary and not sustainable.

The establishment of communal ownership was supported by experts on the North Caucasus (Starodubrovskaya and Sokolov), but not on Afghanistan. This initiative was expressed in the form of translation of some agricultural land to municipalities and regions on the basis of arrangements approved by direct vote of all the inhabitants and monitored by federal authorities. This idea has also received some support from experts on Afghanistan however, as Rowswell just pointed out, this is difficult to achieve given the subjugation of local government structures to warlords. Many experts likewise supported a ban on the sale of land to non-members of local communities, though some did negatively evaluate the proposal – Konstantin Kazenin sees this point as

extremely harmful.

The idea to privatize land in both cases surprisingly received broadly low support. The experts (except Fotini Cristia) don't see this mechanism as a solution. Still, the vast majority of experts supported the initiative to establish a special system of "land banks" to issue loans to individuals and municipalities for the acquisition of agricultural land.

Most experts negatively rated items from the "statist" program. Very few supported the idea of enforcing a moratorium on the privatization of land in the North Caucasus or the transfer of all agricultural land in Afghanistan to the state. According to Ruben Enikolopov, "in conditions of the weak state and flourishing corruption all development programs administrated by state are condemned to failure". Ben Rowswell added that in Afghani reality it would be very unhelpful, since the government is captured by private interests - this would have the effect of handing all farmland to warlords to do with as they please.

Similarly most experts rejected the introduction of progressive taxation and government subsidization of agriculture. As Yuri Zhukov pointed out, these solutions are simply economically inefficient. At the same time, sociologist Georgy Derluguian, defending the "statist" approach wisely noted that, "it's a bit late to be concerned with establishing a small-scale agricultural sector in a country where the state is the main and almost only means of profit, where the demographics have long outstripped ecological capacity, and an urban lifestyle has already squeezed out traditional ways of life." Incidentally, more conservative proposals for land relations that relied on customary and Sharia law to settle disputes were negatively received, again with some notorious exceptions - Robert Crews and Irina Starodubrovskaya see the establishment of the Sharia and common law as one of the most effective ways for reducing the level of violence in both regions.

Summarizing the results of expert survey and our own analysis of the problem we put the following proposals:

1) Inject the LTPR issue into the political agenda and long-term development strategies.
2) Conduct a program of full registration and titling of agricultural land, as soon as this is feasible.
3) Conduct pilot projects of agrarian reform to assess the effectiveness of different programs.
4) Appropriate a limited share of agricultural land to municipalities and local communities to then be distributed on the basis of arrangements approved by direct vote of all the inhabitants of the municipality, and according to monitoring by federal authorities.
5) Privatize other land on the basis of transparent auctions, with the consent of the majority of the inhabitants of the municipality.
6) Create a special system of land banks tasked with issuing credit to individuals and municipalities for the purpose of acquiring agricultural land.
7) Raise the tax rate on agricultural land used for other purposes.
8) In some cases, with the consent of an absolute majority of the inhabitants of the municipality, employ customary and/or Sharia law to settle disputes. For instance, in Afghanistan local shura and elders enjoy a great deal of confidence.

Concluding Remarks

Paraphrasing the words of Leo Tolstoy, it can be said that, contrary to families, all happy, fortunate countries are fortunate in their own way, but unfortunate ones have very much in common. Poverty, inequality, corruption, ethnic and religious conflict, civil strife, and other signs of conflict – all of these can be found, in a particularly hellish tandem, in many places in this world.

It is tempting and likely accurate to look at conflict in these regions as a vicious circle, the ceaseless fight by powerful, non-state interests, to secure and acquire property which then gives them power to grow and defend by whatever means necessary. Simply, it is impossible for a society to thrive in this environment. It is absolutely correct for the Russian and American governments to believe social and economic development is at the root of stemming violence and chaos in afflicted regions. What is vital, and what has been unfortunately missed is that at the root of socio-economic development lies the protection of property rights, in agrarian societies the most important property being land. Failing to put LTPR-oriented policy proposals, such as those we include, in a properly elevated position within a broader development policy threatens to render all other measures ineffective.

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US-Russia Cooperation on Combating Drugs from Afghanistan

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Introduction

In 2009, the LA times interviewed a young Russian, Anton, a son of college educated engineers, a graduate of a good Russian university, a sales manager, and a heroin addict. His addiction, and that of about 2 other million Russians, has only been further enabled by the increased flow of Afghan drugs through the Russian Federation.[1] In fact, according to Viktor Ivanov of Russia's Federal Drug Control Service, 90% of Russian addicts use Afghan heroin.[2] Thirty thousand young Russians die from the use of this drug.[3] According to him, the extremely porous borders throughout central Asia has only enabled this drug to reach the hands of young Russians like Anton and further the deterioration of Russian population that is already declining.[4]

The effect of Afghan opium does not end there. It is a critical national security issue to those nations that are affected not only by the use of heroin within their own country, but also by the extremist activities in or outside of Afghanistan that are financed by the drug. With these concerns in mind, the Russian government has taken an added interest in addressing not just opium trafficking but also rooting it out at its Afghan source. And with this interest has come a newfound avenue for cooperation between Cold War enemies: The Russian Federation, the United States and even NATO waging a counterinsurgency campaign in Afghanistan.

The following paper outlines the history and significance of the opium drug problem for Afghanistan, the United States and Russia. It highlights concerns shared by both the U.S. and Russia and suggests ways in which these two nations can utilize this opportunity for counter-narcotic cooperation as an avenue for further strengthening of ties between Moscow and Washington. While an operation in October 2010 illustrated the potential benefits of joint engagement of counter-narcotics, few follow on measures have been taken to continue to momentum in counter-narcotic collaboration.

Background

Up until the Soviet invasion of Afghanistan in 1979, opium production in the central Asian nation was relatively small. The invasion, however, catalyzed poppy growth as a powerful and profitable instrument in insurgent financing.[5]

Neither did this entrenched poppy cultivation and exportation cease following the Soviet withdrawal in 1989. During the civil war that followed the 1992 collapse of the Najibullah regime, opium trade became a major source of funding for the feuding factions.

By 1994, the Taliban emerged as the dominant faction, and gained control of 90% of the country. After assuming control, it proceeded to create an economic environment in which the international trade of opium could burgeon.[6]

1 http://articles.latimes.com/2009/sep/25/world/fg-russia-heroin25

2 http://www.washingtonpost.com/wp-dyn/content/article/2010/10/30/AR2010103002117.html

3 http://rt.com/usa/news/afghanistan-us-drug-trafficking/

4 http://www.nytimes.com/2009/09/23/world/europe/23russia.html

5 This development was the result of the simultaneous development of an opium processing industry in Pakistan and the regime change in Iran, as noted by Byrd

6 Responding to Afghanistan's Opium Economy Challenge: Lessons and Policy Implications from a Development Perspective,

The output of opium after the ascension of the Taliban to power grew consistently each year until 2001. The drug was treated as a legal commodity, and taxes were kept low on its production, which allowed for a continual rise in production. However, during the 2000-2001 growing season, cultivation was largely suspended. While the actual reason for this cessation is unclear, it has been speculated that the Taliban ordered a halt on production due to oversupply and large stockpiles.[7] Under this assumption, the decrease in production cannot be seen as a result of the US led invasion of that country in 2001. This is supported by the fact that opium production returned to its pre-2001 levels in the years after the invasion[8].

But in terms of current policy, who are the people anti-drug initiatives are targeting, and what drives them to continue to plant opium? After the US invasion, the production of opium skyrocketed, as Figure 1 shows. For most farmers, opium crops are extremely profitable, due to their low risk, hardiness, and high demand and prices on the international market.[9] In addition, drug traffickers have established their own micro-credit system in which they make advanced payments to farmers during the growing season, and then selling the opium after cultivation.

The challenges faced in countering this well rooted system of poppy cultivation, financing, and exportation is not limited to the Afghan borders. Rather, one of the critical challenges facing NATO and coalition forces in Afghanistan, as well as regional actors, is how poppy and its opium byproduct are shipped out of the country to markets across the world. It is this component of the narcotics trade that is the most perplexing, but also one that may provide opportunities for enhanced cooperation among regional stakeholders.

Role of Central Asian nations

Institutional weakness, corruption and porous borders in Central Asian nations neighboring Afghanistan have only worked to enable this growing supply of opium production to reach individuals in Russia and Europe. Tajikistan and Uzbekistan in particular act not just as transshipment points but as active participants in this narcotics trade. With Afghanistan accounting for 90% of the worlds opium used to make heroin, its neighboring countries are integral to the movement of this product to the world market, where heroin trade is a $65 billion dollar illegal industry.[10]

In Tajikistan alone, national and international agents seized 3.2 tons of smuggled Afghan drugs in 2010. The scale of these seizures, compounded by the much higher estimates of transported drugs that evade seizure, highlights the regional and international significance of this narcotic boom even as International Security Assistance forces (ISAF) conduct a major counterinsurgency campaign.[11]

An initial analysis of this situation points to the lack of border security in this expansive mountainous region. But even Afghanistan's border with Uzbekistan, which is both relatively smaller and better protected, still encounters significant narcotics trafficking. A more fundamental cause is the internal institutional and political situations within many of these countries. Referring back to Tajikistan, which has become one of the largest transit countries in the drug trade, the country has been continuously affected by violent turmoil since its inception as a nation and continued stagnation in its planned economy.[12] All this contributes to the institutional incapacity to effectively monitor the flow of goods and services through the region.

Nearby, the drug trade in Kyrgyzstan has had a major impact on the country, the legitimacy of its government, and the skewed economic conditions on the ground that only fuel continued growth in narcotics trade. Although the Kyrgyz government pursued a major anti-narcotics campaign via improvements in security and monitoring, the inability to implement comprehensive (read developmental) reforms has made employment in the narcotics trade ever more fruitful for poorer Kyrgyzstanis.

Afghanistan's drug trade is a serious threat to the political, economic and social stability of not only the country itself, but to the region and other actors particularly affected by the spread of drugs to its citizens. Furthermore, the control of these profits largely falls under the direction of extremists groups, whether Taliban fighters in Afghanistan or even the Islamic Movement of Uzbekistan (IMU), which is profiteering solely from the continued trafficking of Afghan nar-

William A. Byrd, The World Bank, March 2008

7 Byrd

8 See the United Nations, Afghanistan Opium Survey 2007

9 Byrd

10 "Shifting Afghan Drug Trade Threatens Central Asia." 19 January 2011. http://www.themoscowtimes.com/news/article/shifting-afghan-drug-trade-threatens-central-asia/429125.html

11 Ibid.

12 World factbook. "Tajikistan" CIA. < https://www.cia.gov/library/publications/the-world-factbook/geos/ti.html>

cotics through the region.[13]

Significance to the Russian Federation

With implications for its own population, the stability of nations to its immediate southern borders, and for the financing of extremist groups, Russia has taken a serious interest in countering such problems. Russia's recent intensification of its anti-narcotics efforts is the result of the exponential increase of drug production over the past 10 years, leading to a similar increase in drug's reaching Russia. Smugglers freely transport Afghan heroin and opium north into Central Asia and Russia and onward into Western Europe. Over the last decade the harvest of the opium poppy in Afghanistan increased almost fortyfold.

The Russian government has made the drug trade one of its priorities in both domestic and foreign policy. On June 9, 2010 Russian President D. Medvedev signed Russia's Anti-Narcotics Strategy , which seeks to establish security bands around Afghanistan to block the opiate trade and coordinate international anti-narcotics activities.[14] It is also aimed at significant reduction of illicit distribution, non-medical drug use and scales of consequences of their illicit trafficking. This main goal is expected to be achieved through certain measures, and among them - development and strengthening of international cooperation in the sphere of drug control. Russia must make efforts on the International stage as well to deal with the drug trade. At two meetings between leaders of Russia, Afghanistan, Pakistan, and Tajikistan in 2010, narcotics constituted a serious discussion.[15]

But Russia and the United States share some different ideas on how to address the problem. Russia sees eradication of poppy fields as the solution (or at least as a means to improve the situation). Moscow argues that the U.S. and NATO's refusal to implement poppy eradication programs – in which Moscow has on past occasions offered the use of its cargo planes to defoliate the vast fields – is causing a massive influx of Afghan heroin into Russia. Russia also disapproves of the current American policies aimed at targeting the opium trade in Afghanistan. The Russian position on this point was clearly stated in a speech delivered by Viktor Ivanov at the Nixon Center (Washington DC) on September 24, 2009 entitled "Drug Production as a Threat to Peace and International Security."[16] As an argument Russian party draws the example of successful eradication of coca crop in Columbia conducted by the U.S. "According to U.N. data, in the past year 75 percent of cocoa plants have been destroyed," he said. "This can be attributed to the defoliation method. It is the most effective method and I'm surprised that we are not using it in Afghanistan"- said Ivanov.[17]

Russia is also dissatisfied that the US has not acted on information provided to them by the top Russian anti-drug official about the locations of narcotics laboratories in Afghanistan. According to Victor Ivanov, officials in Kabul were provided with the coordinates of 175 laboratories which process heroin, but DEA agents were awaiting military approval to take down the labs.[18]

Although not in complete liking to this philosophy, the U.S. has made some efforts to curtail the production of opium. But only in the past four years has a truly concerted effort been made on the part of the US government, in conjuncture with the Afghan government, to truly deal with the opium problem. Opium cultivation is decreasing in the northern, eastern and central provinces of the country. It remains the most pronounced in the five southern provinces of Helmand, Farah, Kandahar, Oruzgan, and Nimrux, which represent 95% of Afghanistan's poppy cultivation.[19]

More importantly, the Russian model of counter-narcotics is antithetical to current counterinsurgency efforts that focus on winning the hearts and minds of the Afghan population, especially those Pasthuns in the southern provinces. NATO forces, mainly U.S. Marines, operated in those areas are directed not to eradicate poppy fields, since the "Marines would only alienate people and drive them to take up arms if they eliminated the impoverished Afghans' only source of income."[20] Such an argument extends to all counter-

13 "Here comes trouble." The Economist. 11 June 2009. < http://www.economist.com/node/13837440>.

14 Strategy for the Implementation of the National Anti-Drug Policy of the Russian Federation in the Period Until 2020

15 The first meeting was held on July 30, 2009 in Dushanbe, the second one – on August 18, 2010 in Sochi.

16 V.Ivanov "Drug Production as a Threat to Peace and International Security". Talk delivered at The Nixon Centre.

17 http://www.comiterepubliquecanada.ca/MoscowCalledWashingtonsBluffOnAfghanDrug.htm

18 http://lostchildreninthewilderness.wordpress.com/2010/10/30/kabul-afghanistan-us-russian-forces-team-up-for-56m-heroin-bust/

19 International Control Strategy Report, Volume I: Drug and Chemical Control, March 2010, US Dept of State

20 "Marines leaving opium crop alone." http://www.marinecorpstimes.com/news/2008/05/ap_marines_opium_050608/

narcotics campaigns through a host of insurgencies. As documented by Brookings scholar Vanda Felbab-Brown, campaigns focused on eradication typically fail to bankrupt belligerent groups that rely on the drug trade for financing. Worse, they actually strengthen insurgents by increasing their legitimacy and popular support."[21]

Rather, the U.S. looks to focus at higher echelons in the narcotic trade, looking to root out the heroin processing plants and those Taliban forces taking the crop from the planters. While there is a litany of programs that could be mentioned here dealing directly with the opium question from many different angles, we shall address those, in which the US government is directly involved. First are the Afghan justice system's attempts to deal with the illegal opium market. The Criminal Justice Task Force (CJTF) is charged with enforcing Afghanistan's Counter Narcotics Law (2005) and all drug cases that reach specific thresholds must be prosecuted by the CJTF. Beginning in 2009, the US government will subsidize operation and maintenance costs for a two years, after which the Afghan government will assume responsibility. In addition, attorneys from the US Department of Justice mentor the prosecutors of the CJTF. In terms of actually stemming the farming of poppy crops, the US government through its foreign aid arm, USAID, provided $210 million in 2009 to the Alternative Livelihoods program, which encourages farmers to plant orchards of vine crops instead of poppies.[22]

Even with all of these programs, this is still an uphill fight. In the coming years, it is clear that Afghanistan will need a regional partner with whom it can deal with this problem with a long-term solution. While the U.S. will likely maintain foreign aid for years to come, militarily, its presence in the region will eventually diminish. Therefore it would be advantageous of the Russian Federation to begin working with the American and the Afghan governments to integrate itself into this process, especially in terms of programs to make vine crops and orchards more appealing to farmers. Total crop destruction would devastate local economies and harden the hearts of the Afghan people against powers such as Russia and the United States. If the opium question is to be solved, it must be approached as a process that takes time. Setting fields ablaze would only destabilize the gains already made.

Avenues for cooperation

It seems as though Russia has come around on its eradication-only policy to take proactive measures to address Afghanistan's drug problem. In other words, what had been seen as a point of contention between concerned Russian leaders and overwhelmed ISAF officials has turned into an opportunity for real cooperation in the Afghan sector. Most notably, the joint U.S.-Russia raid on October 29th, 2010 on a number of drug laboratories in Eastern Afghanistan highlighted a major cooperative operation that could pave the way for future coordination. In this raid, 930 kilograms (2,055 pounds) of high-grade heroin and 156 kg (345 lb) of morphin was seized with a collective street value of over $250 million. Russian Drug Minister Viktor Ivanov even mentioned that further intelligence cooperation was possible, whereby Russia wants to "send an additional number of our officers for postings to the international information centers functioning in Kabul."[23]

Most importantly, the drug raid came merely one week after Russian officials made serious accusations of the United States for failing to adequately address Afghan opium and, in particular, the production labs that enable the opium pulp to turn into easily transportable heroin or morphine. However, since the October raid, there has been little further cooperation on Afghan narcotics. This may be due in part to the strong concern that Afghan leaders expressed over the raid and the lack of Afghan involvement or approval. This is an important concern given that the Afghan government and its institutions must part and parcel of any effort to combat narcotics. Moreover, an Afghan reaction to such raids only degrades any possibility of Russia-Afghan cooperation, which is especially critical in the long run once U.N. forces withdraw from the nation.

So how can the Russian government and ISAF officials move forward in constructing a multidimensional and sustainable relationship in countering the narcotics production and trade in Central Asia?

Policy recommendations

1. Cooperating on capacity building in Central Asian nations: Given the historical Russian influence in Central Asian nations and general U.S. interest in enhancing the institutional capacities of key nations, Washington and Moscow can work together to develop security training programs for the nations of Uzbekistan, Kyrgyzstan, and Tajikistan. By emphasizing

21 Vanda Felbab-Brown. "Shooting Up." Brookings Institute.
22 ICSR
23 http://www.bbc.co.uk/news/world-south-asia-11651469

that enhanced border security capabilities can limit the threat of insurgent and extremist activities within their own nations, the U.S. and Russia can leverage these nations in fighting the narcotics trade.

2. Raising through the UN Security Council the status of the problem of Afghan drug production to that of a threat to global peace and security.[24]

It is necessary to admit that since the problem of Afghan drugs concerns the whole continent of Eurasia, it must be placed in the list of threats to international peace and security. Changing in formulation will bring changes in perception of this danger. It will make possible to toughen sanctions against people involved in Afghan drug production, trafficking and distributing and to unite forces to tackle the Afghan drug threat.

3. Introducing into the "UN Sanction List" those landlords who provide their land for growing poppy.[25]

If recommendation #1 is fulfilled, the UN Sanction List "newcomers" will be imposed with serious international sanctions and what will influence general attitude of impunity among the Afghan population.

4. Introducing into ISAF mandate the competence and obligation to destroy drug laboratories.

The absence of such an article appears to be a stumbling block in US-Russia cooperation. If this obligation is fixed in the ISAF mandate, all misunderstandings and reproaches from the Russian side (concerning "ignorance" of provided by the Russians data on drug laboratories location) will be avoided and cooperation within the framework of joint operations will be simplified.

5. Close cooperation of intelligence services.

It is trust that is needed for successfully coordinated activity against the common enemy that cannot be defeated by arms only. In the fields of data exchange (information concerning drug laboratories location, existing and possible traffic ways, illegal finance flows) cooperation of intelligence services will contribute a lot.

6. Further joint counter-narcotics operations with limited Afghan participation.

The first joint US-Russia operation appeared to be very efficient. However in order to avoid discontent from the side of Afghan leadership Afghan military should be provided with access (limited) to information concerning future operations. That could be an Afghan officer that will be given general data just before the actual beginning of the operation. Such secrecy is determined by a high level of corruption within the Afghan top brass.

7. Joint NATO-CSTO counter-narcotics operations. Since the Afghan problem poses a giant threat to all Central Asian countries, it would be logical to involve them into collective actions against drug trafficking from Afghanistan on behalf of the Collective Security Treaty Organization.

8. Establishing religious ties. Cooperation between Russian and American Muslim communities and their Afghan counterparts will be beneficial for both sides. True success will be reached if a common approach of condemning drugs can be worked out and presented to the Muslim community. This would remove the ground of the Taliban ideology and contribute to dismantling of stereotypical equation: "Islam" ="terrorism".

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24 Russia's plan "Rainbow-2" for the elimination of Afghan drug production, Article 1.

25 Russia's plan "Rainbow-2" for the elimination of Afghan drug production, Article 4.

International Arms Control and Law Enforcement in the Information Revolution: An Examination of Cyber Warfare and Information Security

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Introduction

Cyberspace influences nearly every government, industry, and human being in the world. It has been a source of tremendous innovation, but, as the world has increased its dependency on technology for its most basic functions, it has also become more exposed to the underlying vulnerabilities in cyberspace. These vulnerabilities continue to be probed and exploited at an increasing rate. As a result, cyberspace has become not only a major area of international security, but also a new de facto military realm. The US and Russia both possess significant capabilities in this realm and their cooperation is essential to international safety and security in the era of the information revolution.

One of the biggest obstacles to greater cooperation between the US and Russia on cyber / information security is the US emphasis on law enforcement, and Russia's concern with arms control. Both have identified criminal and terrorist use of the tools of the information revolution as potential threats to international security. However, they have not agreed as to whether military activities in cyberspace also require international regulation and control. In the early stages of international cooperation on cyber / information security, most of the focus was on combating cybercrime. The most substantive achievement of this cooperation was the Council of Europe's (CoE) Convention on Cybercrime, which opened for signature in Budapest on November 23, 2001.[i] The US has signed and ratified the Convention, and was actively involved in its development.

Although Russia is a CoE member, it has neither signed nor ratified the Convention. Russia primarily objects to one of the Convention's provisions that allows for unilateral trans-border access of data by law enforcement agencies of one country, without notifying the authorities in another country, violating a state's sovereignty. Russia's approach has been to call for international cooperation that also addresses limitations on military uses of information communication technologies. The US response to the Russian proposals has been a reluctance to engage in any formal discussion of limiting military operations in cyberspace, and an emphasis on the importance of the law enforcement approach. This reaction is in part due to skepticism that cyber arms control limitations could be enforced in any capacity, let alone symmetrically. Despite some recent positive signs of engagement,[ii] this stalemate has held for more than a decade. The predicted cyber arms race has begun, resulting in further expansion of cyber capabilities in the US and Russia, as well as many other countries.[iii]

The current stalemate between the two is only a piece of the puzzle in a long history of tensions in the cyber realm. In 1982, Russia's infrastructure took its first hit from a cyberweapon when a virus was inserted into SCADA (Supervisory Control and Data Ac-

quisition) software resulting in a powerful explosion on the Soviet Urengoy - Surgut - Chelyabinsk natural gas pipeline. In addition, there have been a number of cyber breaches in the US, including a hacker breaking into floodgate computer systems, a teenager breaking into NYNEX (Telephone Company) and the cutting off Worcester Airport in Massachusetts for 6 hours affecting both air and ground communications, and other cases.[iv] A relatively new kind of cybercrime appeared in 1999, when an organized group of allegedly Yugoslav hackers carried out a politically motivated, coordinated attack aimed at blocking NATO's computer networks.[v] Other attacks of this kind have been carried out every year since then, including cyber attacks on US military structures following the collision of a US surveillance plane and a Chinese fighter in 2001, and a cyber attack on a terrorist organization "Kavkaz Center" organized by Russian hackers.[vi] Cyber attacks have grown more frequent and destructive in recent years, including new forms of hacking called denial of service attacks (DoS) that have become a tactic of war since 2000. Today the Pentagon is reporting some 369 million attempts to break into its networks annually, compared to 6 million attacks in 2006.[vii] The immense threat that cyber attacks pose to critical infrastructures and state operations, and recent developments in both countries, have emphasized the importance of addressing these issues now. In 2008, the US experienced the most serious penetration of its classified military networks to date. Subsequently, on June 23, 2009, the Secretary of Defense directed US Strategic Command to establish the new US Cyber Command.[viii] Though its cyber force structure is less clear, Russia has recently been contributing to the creation of information security policy for the Shanghai Cooperation Organization (SCO), an alliance that includes another cyber "titan", China.

Though it is unlikely in the near term that Russia will sign the CoE Convention on Cybercrime, or that the US will accept international regulations that limit its military cyber capabilities, we believe that there are several important steps that should be taken now to foster a continuous level of cooperation on cyber / information security issues that may allow for such agreements to be reached in the future. In order to provide adequate backdrop and substantiation for our recommendations, we will first provide background on current US cyber policy, Russia's information security policy, and the impact of international law in cyberspace. Finally, we will propose our recommendations for cooperation between the US and Russia, which we believe will solve some of the problems identified by both nations.

Background

US Cyber Security

In the US, responsibilities for cyber security are scattered across many agencies. One of the greatest areas of concern, especially for the Department of Homeland Security, is the protection of critical infrastructure. The Department of Justice focuses on the problem of cybercrime, as well as finding the balance between security and the protection of civil liberties and privacy rights. In order to understand foreign policy, however, two other stakeholders are key: the Executive Branch and the military. President Barack Obama recently ordered a detailed review of cyberspace policy, which included analysis of current threats and possible solutions.[ix,x]

Released in May 2009, the "Cyberspace Policy Review" is the most current document detailing the Executive Branch's position on cyberspace. Numerous stakeholders are identified including private sector industries, academics, international organizations including the UN, NATO, and the CoE, as well as various domestic government agencies such as the National Infrastructure Advisor Council and the Joint Interagency Cyber Task Force.[xi] Using these key stakeholders, the review identifies several major problems including the lack of organization in the federal government to address the growing threat, the difficulties faced with a network owned by the private sector, and risks to security from non-state actors who could one day cause critical damage to the US infrastructure and government by compromising or stealing information.[xii] Among the evidence of these problems cited by the review is the lack of a coordinated response by government agencies to the Conficker worm activated in April 1, 2009[xiii], exploitations leading to data theft resulting in $1 trillion lost, and reports by the CIA of malicious activity.

The core proposals for the near term include increased coordination through a new central policy official responsible for the nation's cybersecurity, the preparation of a response plan, improving collaboration between agencies, and with other governments, and a continued campaign to inform the public about the issue.[xiv] Recently, this last recommendation was bolstered by the release of President Obama's new budget that entailed a large increase in cybersecurity

research and development.[xv] In the mid-term, the review proposes creating mechanisms to obtain strategic warnings, analyze threat scenarios, and creating a network that will act during a crisis. The mid-term also focuses on increased communication to solve interagency disputes, and using the Office of Management and Budget's framework to ensure budgets are used for cybersecurity goals.[xvi] Several other key factors were emphasized: improving the partnership between the private sector and the government through information sharing, partnering effectively with the international community through new agreements which enhance identification, tracking and prioritization, building more resilient systems that will enhance the survivability of communications during a national crisis, and maintaining national security through a coordinated plan. The Cyberspace Policy Review clearly establishes cybersecurity as a top priority for the Executive.

In 2011, CSIS reviewed the progress on the Cyberspace Policy Review in a report called "Cybersecurity Two Years Later."[xvii] The report claimed that, although progress has been made in most areas, in no area has the progress been sufficient. Furthermore, the report described the debate on cybersecurity solutions as being stuck on old ideas of public private partnerships, information sharing, and self regulation which have fallen short for decades, and the need for new concepts and strategies. The fear that only a cyber "9/11" would lead to any progress was made even greater by the prospect that waiting for such an event to take action would likely lead to suboptimal and possibly draconian policy solutions.

Among the reports revised observations are two that are particularly relevant to our analysis of opportunities for bilateral steps that can be taken by the US and Russia. The first is a call for the development of a US vision for the future of the global internet that engages other nations, and acknowledges a shift away from the original US centric idea of governance by a private global community, as nations seek to extend their sovereign rights to cyberspace. This engagement could lead to an increase in the number of indictments, convictions, and extraditions related to cybercrime. The second is recognition that the cybersecurity community can now identify practices that reduce risk, teach these practices to personnel, and measure their results. These observations provide support for our own recommendations.

The US military has also identified key issues in the cyber debate and offered its own set of recommendations. Three important sources relevant to the military's stance on cyber are definitions of information operations concepts, recent comments from the commander of US Cyber Command General Alexander, and Deputy Secretary of Defense William Lynn's recent article "Defending a New Domain".

First, the US armed forces are expected to release the new US Information Operations Concepts in which they will define information war. It appears that the document will define information war as strictly information operations limited to offensive and defensive activities.[xviii] In addition, information superiority is the main goal of information operations and it allows commanders to seize, retain and exploit the initiative.

Lynn discusses additional background, concerns, and recommendations. Lynn begins by emphasizing the importance of cybersecurity in light of the most significant breach of US military computers ever, the 2008 attack where classified military networks were compromised.[xix] Lynn notes that US digital infrastructure still gives it a critical advantage over any adversary. Although the US offense is dominant, Lynn argues that this means that the defense needs to be dynamic, including ordinary inspections all the way to a third level of security using highly specialized active defensive tactics.[xx] Lynn additionally recommends that the government strengthen human capital working on US cybersecurity issues, and improve tactics to acquire the latest information technology. Lynn focuses on the critical role of allies, the necessity of shared warning, and stronger agreements to facilitate the sharing of information and technology. Throughout Lynn's article, he emphasizes the widespread impact that a cyber attack would cause, and ways to make the US more secure, but his ultimate goal is to make cyber space safe.[xxi]

General Alexander defined some of the current problems with cyber as the difficulty of centralizing command, the complexity of cyberspace systems, the growing threats that could seriously damage our ability to operate as a country, and the ability to work with other agencies to combat cyber terrorism.[xxii] As solutions to these and other problems, General Alexander highlights the consolidation of command over cybersecurity in the creation of US Cyber Command. Cyber Command leads day to day protection, distributes its cyber resources across the military, and works with many partners inside and outside of the US.[xxiii] In

addition, General Alexander suggests that we need to understand our own networks through a real time operating picture, and to ensure freedom of movement in cyberspace. General Alexander goes on to say that part of the solution may require establishing clear rules of engagement.[xxiv] Similar to Lynn's goal of making cyber space safe, General Alexander defines the goal as minimizing the effect on US persons and not infringing on civil liberties while protecting national security – similar to the balancing act described by the Executive Branch review.

When questioned about Russian proposals for a cyber treaty, General Alexander responded that such issues would be handled by policy leaders, not generals, and that the Russian proposal may serve as a starting point, but that the US should develop a counter proposal. Both Lynn and General Alexander offer a complete view of the US military's perspective, emphasizing the security threat of cyber attacks and their potential widespread impact on the population. Both also offer tangible policy recommendations to increase security and enhance cooperation at the domestic and international level. The US Executive branch and the military both have substantial ideas about making cyberspace safer. Initiatives like strategic warning, and better definitions for concepts in cyberspace and information operations could be enhanced through international cooperation.

Russian Information Security[xxv,xxvi, xxvii, xxviii,xxix]

Just like the United States, Russia is a "titan" of information security. Currently there are many perspectives on cyber security, but Russia is focused on the military aspects of the issue. Russian information war expert S.P. Rastorguyev defined information war as a battle between states involving the use exclusively of information weapons in the sphere of information models. The final objective of an information weapon's effect is the knowledge of a specific information system and the purposeful use of that knowledge to distort the model of the victim's world. Rastorguyev emphasizes that there are two sides to any information war: information-technical and information-psychological aspects, which makes it more dangerous than any conventional war.

Information war poses a new type of threat, and one that Russia is trying with difficulty to confront. In 2005, the Federal Council of the Russian Federation released a political analysis of cybersecurity of Russia, in which it acknowledges that Russia was not ready for the transition to an information society. Thus, Russia's critical infrastructure was threatened due to these vulnerabilities in cyber security stemming from Russia's inability to keep up with the fast pace of cyber threats at the time. The Russian Federation recognizes several types of threats to the cyber sphere. The first threat is information weapons, which can influence the technical infrastructure of a society and its people psychologically. The second threat is financial crimes which involve the use of modern computer technologies. The third threat is that of electronic control whereby one tracks the lives of people. The final threat of information weapons is the political applications it has to introduce informational totalitarianism, expansionism and colonialism. Thanks to the latest technology, information influence on the enemy evolves from individual information sabotage and acts of disinformation, to a way of exercising international policy that is massive and has a pervasive nature of application. Among its recommendations, the Federal Council stresses the need for even more global cooperation, and makes specific recommendations for Russia, including improving cyber and information legislation, developing a state system of protecting information as well as classified information, and applying new Russian scientific technologies in cyber sphere.

The fundamental document that defines Russia's government position on issues of information security and the threats posed by it is the Doctrine of the Information Security of the Russian Federation signed by Vladimir Putin in 2000. It explains the official views on the goals, tasks, principles and main directions of ensuring the information security of the Russian Federation. This doctrine provides the basis for the shaping of the state policy of ensuring the information security of the Russian Federation, preparation of propositions on improving the legal, methodological, scientific-technical and organizational support of the information security of the Russian Federation, and the development of target-specific programs for ensuring the information security of the Russian Federation. As defined by the doctrine, Russia's main concerns are directed at military application of cyber technologies. The contemporary level of high technologies may be used for committing terrorist acts of a new kind. Cyber terrorism is marked by the government as another grave threat to international peace. Terrorist acts in the cyber sphere have several specific goals, including destroying infrastructures at the national and transnational level, as well as accessing unauthor-

ized information. To prevent all types of threats at the operational level, it is very important to have physical security (including physical access control) of key elements of network infrastructure and software, and on a technical level - logging and active audit system to detect abnormal situations that can destructively affect its functionality. Early detection and prompt and adequate response to these situations, are also essential to providing a higher level of security.

In order to provide better security and counter the threats discussed above, Russian officials have always favored the idea of international cooperation. The Shanghai Cooperation Organization, founded by Russia, China, Kazakhstan, Kyrgyzstan, and Uzbekistan, aims at maintaining peace, stability and greater security in the member states of the SCO. This stability includes strengthening trust between the participants in the Agreement, opposing threats to international information security (IIS) by construction, and improvement of the mechanism of the joint actions of the Parties, and opposing information terrorism. It is important to note that SCO states should align their military policy so as not to proliferate information weapons and technologies. This is a statement promoted by Russia. Russia believes that the most effective way to achieve this internationally would be a collective statement of the UN member-countries of their adherence to the principle of the non-proliferation of information weapons.

Russia's commitment to international cooperation also includes joint work with law enforcement groups within the so-called 24/7 Network, comprised of 48 participating countries.[xxx] The idea of the 24/7 Network is based on the existing network for 24-hour contacts for International High-Tech Crime from the G8 Group of Nations. With the creation of the 24/7 network, law enforcement authorities of the participating states cooperate with law enforcement authorities of foreign countries in order to detect, prevent, combat and disclose cross-border crime in the information sphere, exchange operational and other relevant information of interest, execute requests for assistance in preventing, combating and solving crimes, organize and conduct search operations on the Internet to identify, prevent and document cross-border crime.

Russia's definition of information security is much broader than the US's cyber security, but it allows Russia to incorporate much broader security goals reaching from people's psychology to critical infrastructure. Russia is highly concerned with the threats posed by information security, and Russia's primary goals are focused on international efforts that limit military capabilities while protecting critical infrastructure and other key components of the nation threatened by cyber attacks.

International Cyber / Information Security Activity

Computer crime and warfare do not simply affect the cyber sphere, but can extend to critical infrastructure, including power grids, healthcare, financial, telecommunication systems, oil and gas infrastructure, and numerous other areas not usually identified with cyber. It is critical to demonstrate the wide scope that cyber attacks can have while examining the threat of cyber war. The most well known cyber weapon of recent times is Stuxnet. This computer worm was found in 2010 and it's reportedly the first malware to include a program logic controller rootkit. Stuxnet was allegedly targeting the Iranian nuclear program as it infected personal computers of the staff at Iran's first nuclear power station. It was then capable of seizing control of the plant and ultimately destroying it. Some Western experts say its complexity suggests it could only have been created by a "nation state".[xxxii] A computer worm can easily spread and infect even highly secured objects, and its damage and lasting effects can be irrevocable.

This one example of Stuxnet demonstrates how widespread cyber war can be, and thus cyber, just like any other arena of war, does not take place solely bilaterally, but rather predominantly in an international sphere. Although both the United States and Russia each have their own prerogatives and goals when it comes to cyber/information security, the rest of the international community is also involved and has struggled with the same problems that the two individual states have been confronting. However, international law has struggled to keep pace with the impact of the emerging technologies of the information revolution on international security. In what might be called the first phase of the international debate on these issues, a significant portion of the discussion was about how existing international law regarding the use of force and armed conflict should be applied to new cyber enabled scenarios. In the second phase, the earliest adopters of mischievous cyber actions were often criminals, and the international community began grappling with the problem of cybercrime. In the third and current phase, the unsolved cybercrime problem has been compounded by greater military focus on at-

tack and defense in what has been recently labeled as a new domain of warfare comparable to land, sea, air or space. In each phase, problems that went unaddressed have become almost inextricably tangled with each other, further complicating the international community's response.

Phase I: International Law[xxxiii]

In the first phase of applying current international law, three critical problems emerge: ambiguity, anonymity, and espionage. Defining what constitutes a threat or use of force in cyberspace depends on the facts, cases, context, relevant law, and circumstances. One must understand the law of conflict management and the contemporary norms of the UN Charter that regulate force during peacetime, including necessity, proportionality, unnecessary collateral damage, and anticipatory self defense. Short of a declaration of war or an occupation, there is no international armed conflict until the use of force of scope, duration, and intensity reaches a level of armed attack under Article 51.

International law clearly permits self defense in response to cyberspace attack under certain circumstances. Anticipatory self defense is permissible when the necessity of self defense is instant, overwhelming, leaving no choice of means, and no moment for deliberation. States have an obligation to refrain from a threat or the use of force against the territorial integrity or political independence of another state. But, states never lose the right to necessary and proportional self defense. Nevertheless, the right to self defense may not justify an armed response. Response must be necessary and proportional, and it requires predetermination of potential threat posed by penetration of specific computer systems to the national interests of the state. Any computer network attack that intentionally causes any destructive effect within a sovereign state is an unlawful use of force under Article 2(4) which may produce effects of an armed attack, and prompt the right of self defense.

If the identity of the attacker is known, a victim may respond in a manner that is both necessary and proportional, in kind in cyberspace or with more traditional use of force. The difficulty remains to determine identity. Anonymity undermines deterrence and the ability for self defense. The real challenge may not be whether international law will permit a use of force in self defense, but whether technology will allow a state to respond by identifying an intruder or attacker.

Espionage, including non-consensual penetration of computer systems, is recognized as an essential part of self defense, whose lawfulness during armed conflict is recognized by the 1907 Hague Convention IV, and in peacetime by the 1961 Vienna Convention on Diplomatic Relations. It may demonstrate hostile intent of an intruding state, and it may invoke the victim state's right to anticipatory self defense, but state practice has recognized a right to clandestine intelligence collection as part of foreign relations policy. It is only unlawful under the domestic law of most states. Cyberspace infrastructure, such as telecommunications systems, computers, and satellites, has been used in intelligence collection since their invention under the tactical concept of information operations. However, the same tools that are used for espionage can also enable pre-attack exploration, or an actual attack. Hostile and potentially destructive acts are only one key stroke away, and may materialize into unlawful use of force at the speed of light. But, short of actual destructive attack, it is difficult to be sure of intent. A legal regime that fails to recognize the ability of state to defend itself before it has been attacked is unacceptable, and the difficult problem of attribution remains.

Phase II: Convention on Cybercrime[xxxiv]

The CoE's Convention on Cybercrime is the most substantive, and broadly subscribed, multilateral agreement in existence today that focuses on the issues of the second phase. Its most relevant properties with regard to the US and Russia are: heavy western influence, and a controversial provision for unilateral trans-border access by law enforcement agencies to computers or data with the consent of the computer or data owner.

The US actively participated in the negotiations in both the drafting and plenary sessions, and both the Department of Justice and the Senate took the position that the Convention required no implementing legislation in the United States. Though the CoE comprises 47 member States, including all 27 members of the European Union, and Russia, China is not a part of the CoE, and Russia has frequently repudiated the Convention. Given that these two countries have been attributed by many as the source of some of the most serious cyber attacks in recent years, and that some of these attacks are suspected to be state sponsored or, at least, state tolerated, their absence from the treaty is

all the more troubling. Compounding the lack of participation from these two key players is the fact that there is not a single nation from Asia, Africa, or South America that has ratified the treaty.

Russia has not signed the Convention, let alone ratified it, largely due to the controversial remote search provision, which is seen by Russia as an unacceptable violation of national sovereignty. The UN has also expressed concern about the reluctance of non-CoE states to accede to a treaty that they had no hand in developing. The International Telecommunication Union (ITU), the UN agency responsible for information and communication technology issues, has advocated for its ITU Toolkit, created with global participation as model legislation for countries to adopt, allowing them to harmonize national legislation without a requirement to join an international treaty. Despite these criticisms, the CoE has pushed back, arguing that what is needed is to get more countries to accede to the Convention, not to reinvent the wheel. The convention has received strong support from the Asia-Pacific Economic Cooperation, the European Union, Interpol, the Organization of American States, and the private sector.

The goal of the Convention is to protect society from cybercrime by providing for the criminalization of such conduct, adoption of powers sufficient for effectively combating such criminal offenses, facilitation of their detection, and ultimately investigation and prosecution. These objectives are accomplished primarily through arrangements for fast and reliable international cooperation.

The Convention requires signatories to establish certain offenses as criminal under their domestic law, when committed intentionally. These offenses include, but are not limited to, access to or serious hindering of the functioning of a computer system without right, interception of communications without right, input, damaging, deletion, deterioration, alteration or suppression of computer data without right, and the willful infringement of copyright and related rights.

Two of the most important provisions to facilitate investigation address the preservation of data, and the establishment of jurisdiction. The Convention seeks to enable a signatory's competent authorities to order or similarly obtain the expeditious preservation of specified computer data from another signatory. Signatories must also establish jurisdiction over any of the substantive offenses set forth in the Convention that are committed in their territory. However, the term "committed in the state's territory" is not defined. The examples do not include nor do they exclude the most critical case for international cooperation: the computer system attacked is outside the states territory but the attacker is within it. Other forms of mutual assistance addressed by the convention include extradition, real-time collection of traffic data and recording of content data, wiretapping, the ability to spontaneously forward information to another Party, and the designation of a point of contact available on a twenty-four hour, seven-day-a-week basis to facilitate the necessary assistance.

The most controversial aspect of the Convention is the permission to access or receive, through a computer system in its territory, stored computer data located in another state without notifying that state's authorities as long as the lawful and voluntary consent of the person who has the lawful authority to disclose the data is obtained. During the negotiations of the convention the controversy was settled by limiting unilateral actions to two types all could agree on, the other being open source data.

The Convention does not address the particular concerns that may be raised by cyber attacks that are not just criminal acts, but may also constitute espionage or the use of force under the laws of war. This gap is created by the caveat that offenses are committed 'without right', where protection of national security is included. The negotiators of the Convention were primarily representatives of law enforcement, justice, and foreign affairs ministries and agencies. Therefore, the Convention does not deal with the issues that might arise when a nation is under cyber attack and cannot afford to wait for another Party's cooperation.

Phase III: Russian Proposals for a Cyber Treaty at the UN [xxxv, xxxvi, xxxvii, xxxviii, xxxix]

As an alternative to the Convention on Cybercrime, Russia has focused on a proposal to the UN to restrict what nation states can do with cyber weapons. On September 23, 1998, the Russian Minister of Foreign Affairs, Igor S Ivanov, wrote a letter to the UN Secretary General calling for measures to be taken immediately to prevent a new area of international confrontation from emerging from the information revolution. The letter identifies the threat as emanating from information weapons and information wars which are defined as actions taken by one country to damage the

information resources and systems of another, while protecting its own. Furthermore, the destructive effects of such information weapons are suggested to be comparable to weapons of mass destruction.

The letter also includes a draft resolution identifying the following three concerns: the technology of the information revolution may potentially be used for purposes incompatible with the objectives of ensuring international security and stability and the observance of the principles of non-use of force, non-interference in internal affairs, and respect for human rights and freedoms; these technologies might be used to improve existing weapons, or create new weapons; and, such technologies might also be exploited by criminals and terrorists. The draft also proposes to begin work on defining concepts such as information weapons and information war, to investigate international legal regimes to prohibit the development, production or use of information weapons, and the establishment of an international center for monitoring threats to global information security.

On August 10, 1999, responses from Australia, Belarus, Brunei Darussalam, Cuba, Oman, Qatar, the Russian Federation, Saudi Arabia, the UK, and the US were reported in UN document A/54/213. The Russian response expanded on the initial proposal adding emphasis to concerns over military use of information weapons. The response states that, as a result of the information revolution, the global and regional balance of forces could be altered, giving rise to tension between traditional and emerging centers of power and influence. The arms race that could ensue would threaten both individual states and collective security. Furthermore, the universality, efficiency, economy, secrecy and impersonality of information weapons make them an extremely dangerous means of exerting influence. The Russian response explicitly states that contemporary international law has virtually no means of regulating the development and applications of such threats. For these reasons, international legal regulation of civilian and military information technology is required to meet the needs of international security and to reduce the threat of the use of information for terrorist, criminal or military purposes. This could be achieved by developing a code of conduct for States, which could evolve from a multilateral declaration to an international legal instrument.

The US response in A/54/213 was structured in five parts: general appreciation of the issues, international security aspects, economic trade and technical factors, law enforcement and anti-terrorist cooperation, and the advisability of developing international principles. With regards to international security and information security, the US response cited the long history of national use of radio frequency jamming, and electromagnetic counter measures, and the likely future military use of technology to protect its own data links, as well as several other legitimate uses. In reference to economic, trade and technical factors the US highlighted the importance of the need to protect scientific research, and intellectual property, and of regulations that promote compatibility and safety in electronic systems.

The bulk of the US response is in the discussion of law enforcement and anti-terrorist cooperation. The US highlights increased vulnerability to criminals or terrorists as a result of the information revolution and the fact that all States are increasingly vulnerable now. It therefore focuses on the criminal misuse of information technology. The US response highlights domestic efforts to protect its own critical infrastructure, recognizing that these efforts depend in some part on the level of security of systems beyond its borders. Because of this dependence, the US would like to focus on getting other states to take the necessary steps to secure their domestic information systems and to prosecute those who attempt to disrupt such systems to the fullest extent of the law. The US cites its own long history of amending computer related statues to improve them and to meet new problems.

Given these complexities, the US believes it would be premature to formulate overarching principles pertaining to all aspects of information security. However, the US recognizes the importance of international cooperation to combat information terrorism and criminality, and cites the work being done by the CoE, the Group of Eight High Tech Crime Group, the Organization of American States, and the United Nations Asia and Far East Institute for the Prevention of Crime and the Treatment of Offenders. The US advises that it would be unwise for the General Assembly to formulate strategies that would interfere with the work already under way.

Recommendations

Several goals for the US, Russia and the international community have been defined above, as have preexisting conditions within each arena that prohibit or accelerate existing cyber / information security policy recommendations. The pressure to develop

offensive and defensive capabilities is spreading, and 120 countries around the world are working on, or have already developed information weapons. In addition, attribution is exceedingly difficult. One of the biggest obstacles to greater cooperation between the US and Russia in addressing these problems is the US emphasis on law enforcement, and Russia's concern with arms control. Despite important differences in their perspectives on many core issues related to cyber / information security, both nations have emphasized the importance of working with the international community. Immediate bilateral cooperation between Russia and the US could provide a foundation for further international cooperation including involvement with other key stakeholders in the cyber arena, most importantly China. Action can and should be taken in the following three general areas: reducing vulnerabilities that lead to cyber attack, expanding domestic initiatives for cyber / information security to bilateral participation, and creating paths for increased levels of cooperation through ongoing engagement on cyber / information security which could someday lead to the level of engagement and trust necessary for a comprehensive bilateral or multilateral treaty.

Reducing Vulnerabilities

Though the attack vectors in cyberspace seem to be limitless, the vulnerabilities on which they depend are much more finite.[xli] This key asymmetry makes computer network exploitation (CNE) depend on the existence of such vulnerabilities, regardless of who originates the exploit, from where they do it, and for what purpose. An effort to eliminate as many of these vulnerabilities as possible might make the development of military weapons that exploit them more difficult, but may not be as controversial as a limitation on the military's option to do so. Raising the bar of CNE to the point where it was only an option for military organizations might simultaneously reduce the total number of CNE, and make the problem of attribution slightly less daunting.

Furthermore, CNE enabling vulnerabilities in particular pieces of software or hardware are not the only vulnerabilities which can be targeted. Resilient system design, especially of critical infrastructure, and systems of systems, can help to mitigate the damage caused by individual component failures, or corruption at various stages in complex processes. By reducing the impact of such failures, the original incentive to attack these targets can be reduced, thereby increasing safety and security.[xlii] Again, contributing to such design improvements may make it more difficult for a military cyber weapon to take out a power grid, but doing so may be more feasible and acceptable than outright prohibitions on such actions.

Recommendation 1: The US and Russia should jointly sponsor a bilateral research center for resilient system design and vulnerability mitigation by nominating one lead academic institution in each country and funding several yearly activities to be conducted by these organizations. Such yearly activities would include conferences to discuss joint research on resilient design, 'bounty hunter' contests that reward researchers who discover existing vulnerabilities in widely used commercial and open source software and hardware, and possible joint research exercises in network security and forensics. All scholarship produced by this research center would be shared, contributing to the safety and security of both countries, as well as increasing engagement and trust in cyber / information security.

Expanding Domestic Initiatives to Bilateral Participation

The US Cyberspace Policy Review identified many domestic initiatives to secure cyberspace and harness the full power of the information revolution. Not all of these initiatives would be suitable for extension to bilateral participation. Nevertheless, any alternatives that could be identified as such would represent actions that have been deemed important to effectively coordinating a US response across a complex and, in some ways, competing set of stakeholders. If such mechanisms enable more effective national response to cyber incidents, it would be reasonable to expect that some of them might also enable more effective international response, provided that the issues of sovereignty, control, and unified purpose could be adequately balanced.

Several promising examples of alternatives that might fit include developing mechanisms to obtain strategic warning, maintaining situational awareness and inform incident response capabilities, developing a set of threat scenarios and metrics, developing mechanisms for cybersecurity-related information sharing, and expanding sharing of information about network incidents and vulnerabilities with key allies.

Recommendation 2: The US and Russia should search for domestic cyber / information security initiatives currently underway that are poten-

tially suitable for extension to bilateral participation. Any collaboration on such substantive matters, even if narrowed in scope, or spun off from the domestic initiative, would require a great deal of trust, but could also be tremendously important. It could be critically important, for example, to create a common vocabulary and efficient mechanisms that enable the US and Russia to exchange incident related information in circumstances where both states wish to do so, and to clear, or at least identify, any bureaucratic hurdles that might exist in times of crises which might hinder the use of such mechanisms. Existing channels of communication for such communication may not be sufficient to mitigate the risks associated with crises that occur at net speed.

Recommendation 3: Additionally we recommend a shared warning system stemming from a domestic initiative turned bilateral. The US has already promoted the idea of shared warning in Australia and the UK.[xliii] However, it is critical that this shared warning system be extended to Russia, if not started bilaterally between Russia and the US. A shared warning system would consist of an agreement that if either side experienced a cyber attack or discovered information about an upcoming attack on itself or the other nation it would warn the other nation so that they may learn and adapt. It would require direct communication between the organizations in the US and Russia responsible for cyber, such as the US Cyber Command as well as the relevant stakeholders in Russia. As Lynn stated, "Collective cyber defenses are similar to air and missile defense in that the more attack signatures that you see, the better your defenses will be."[xliv] The warning system would not only serve to warn the other nation about possible attacks from nation states, but also attacks from non-state actors, which is one of the biggest cyber threats today. It is crucial that Russia and the US work together to warn one another of upcoming threats and current attacks in order to build better defense systems and a more secure cyber world.

Creating a Path for Increased Cooperation

Returning to the core problem of the US orientation towards a law enforcement approach, as opposed to the arms control approach advocated by Russia, it has been noted that these goals are by no means mutually exclusive. Therefore, despite any current differences in opinion, the two approaches could in theory coexist to the benefit of all parties. Nevertheless the road between where we are today and this ideal outcome still seems quite long.

Several incremental steps on this path could go a long way towards creating an environment where both parties could work together towards addressing each other's concerns and building a sufficient level of trust to proceed further. One such step would be to evaluate all of the ideas put forward unilaterally by each side as actions for international cooperation, and from these actions to identify and advance actions that would be most attractive to the other party.

Recommendation 4: In order to go forward with bilateral negotiations, both sides need to come together to define what cyber/information security is. We recommend establishing a collaborative definition database. One of the primary issues with cyber security today, as discussed above, is the conflicting definitions which inhibit both law makers and military actors. In order to overcome the divide on definitions, we recommend that a research center be established where academics and policy makers from both the United States and Russia would collaborate and define the critical issues of cyber security. The definitions will cover a wide range of issues, but will focus on what is cybersecurity or information security, what is cyber warfare, what is a cyber weapon and what constitutes a cyber attack. Once the center establishes what it believes is a set of definitions that both countries could accept, it would submit these definitions to the respective executive bodies. If the Presidents approve of the negotiated definitions, the definitions will then be submitted to the UN General Assembly for global approval because, although we believe bilateral negotiation is a strong starting point, cybersecurity must be tackled from the international level. It is essential to define what cybersecurity and other related issues mean and what constitutes an attack so that law makers and policy makers can better work in the complex realm of cyber space. Since cyber space is constantly changing, we imagine that this definition process will be ongoing, with a new set of definitions submitted to the UN once every year. In the long term, this process of defining the world of cyber would be a spring board to define the rules of engagement so that militaries can know how to strategize and act.

Recommendation 5: The US should find a way to engage Russia in as many of the law enforcement mechanisms from the CoE Convention on Cybercrime as Russia is willing to try without requiring formal ratification of the Convention. Similarly, Russia should find a way to engage the US in as many

of the activities of the Shanghai Cooperation Organization on information security without requiring any formal participation. These arrangements, if found, might be optimal places to explore the other party's reactions to any unilateral suggestions for international cooperation. Though these arrangements will face many challenges, such as Iran being an observer of the SCO, and Russia already being a member of the CoE, similarly challenging situations have been successfully circumvented in other arenas with some degree of success. The NATO-Russia council, for example, has kept valuable lines of communication open to the benefit of both parties and allowed for progress that otherwise might not have been possible. The chances for successful resolution of the stalemate over cyber / information security will be greatly increased if the parties are given substantive opportunities to work together through their issues in the most meaningful forums.

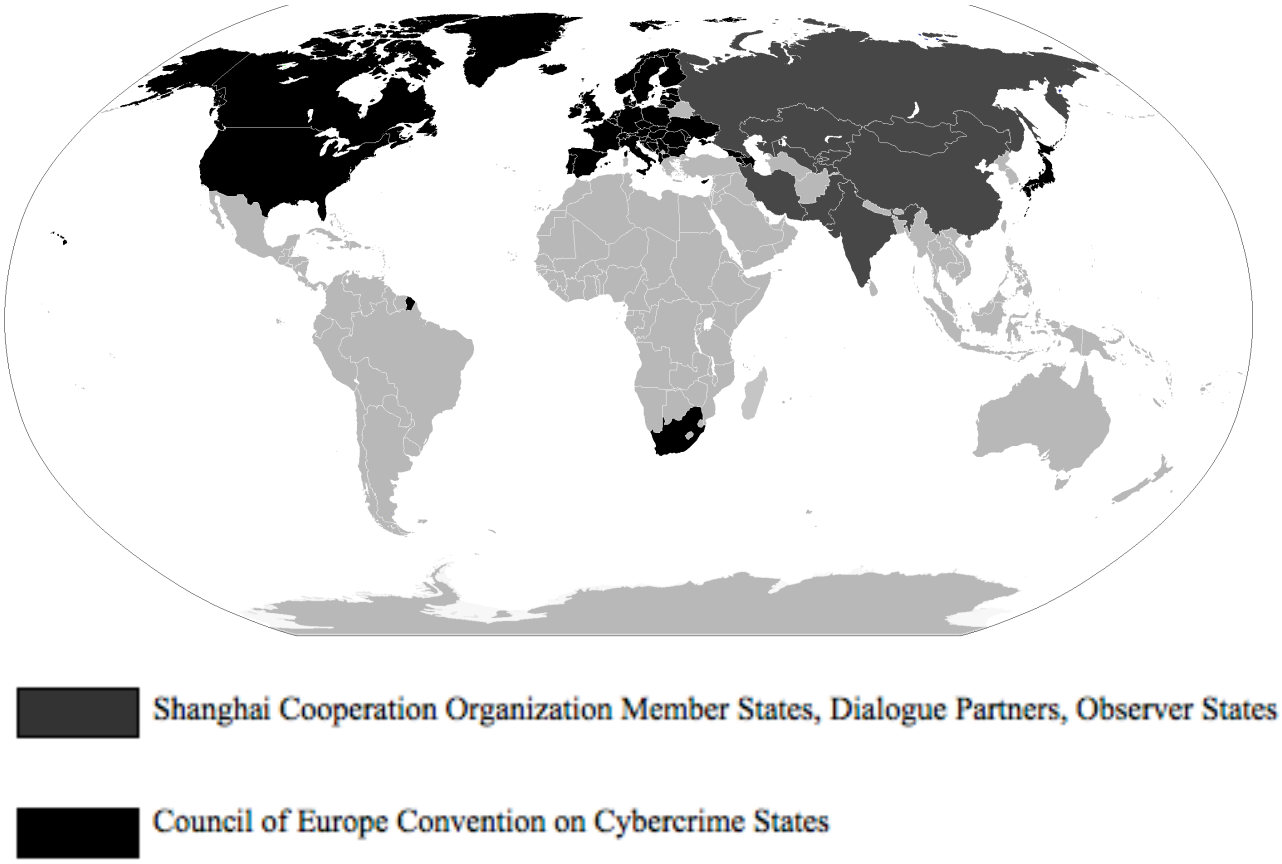
Conclusions

Cyber/information security may ultimately require increased international collaboration, but the variety of views and positions on this issue are so varied from country to country, that the states are not often able to agree. Other work in this field, such as the reports from the EastWest Institute's Worldwide Cybersecurity Initiative, has cited the significance of meaningful cooperation between the USA and Russia in terms of the creating a basis for new international agreements. We share the enthusiasm for the path EWI is pursuing from a bilateral Track 2 initiative to official government Track 1 channels, and subsequent extension to a multilateral process.

Though our analysis is similar in some regards to the work of the EWI, two key differentiating factors are worth highlighting. First, we have focused on the arguments made by Libicki, Devabhaktuni, and others, that the same types of system vulnerabilities enable many of the different security concerns of both US and Russia. In a perfect world, if there were no software, hardware, or design flaws, such systems would be significantly harder, if not impossible to exploit, human involvement and natural disasters notwithstanding. Though pursuit of an ideal could perhaps be attacked as unreasonable, it is hard to argue that we should not pursue significant opportunities to address the source of both law enforcement problems, and arms control issues in cyber space. Furthermore, by working together to reduce these vulnerabilities, and consequently raising the bar for the effort required to conduct any cyber mischief, a bilateral effort could reduce the impact of non-state actors, and consolidate the strength of the state in this realm. This outcome is a potential motivator for both countries. Second, as students participating in a bilateral academic initiative, we believe that academia is uniquely suited to enable the type of collaboration we have outlined to reduce vulnerabilities and track relevant definitions. Sharing ideas on resilient design, mutually developing best practices to reduce vulnerabilities, and developing mechanisms to track important terms and their meanings are activities which are unlikely to require access to highly sensitive information, and which leverage the strength of academic institutions.

Russia and the United States are recognized world leaders within the cyber sphere, and both countries realize the capacity of this technology for innovation and weaponization. As cyberspace becomes a declared domain of warfare comparable to land, sea, air and space, the US and Russia face a crucial test of their ability to work together on important issues of international security. The different approaches to cyber / information security that each favors are not incompatible. Arms control and law enforcement are both critical components to international security in the era of the information revolution. Taking action on our recommendations will help to create an environment where both countries can find an appropriate balance, and set an example for the international community.

Appendix



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Energy Sectors and Geographic Regions for Potential US-Russia Cooperation

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Introduction

Following the "reset" in US-Russian bilateral relations in 2009, the Presidents of the two countries established the US-Russia Bilateral Presidential Commission (USRBPC) to serve as an organization where both countries would be able to address issues of mutual interest and examine the potential for bilateral cooperation in key areas. The Sub-Group on Energy Security is one of the working groups operating under the auspices of the USRBPC. Its aim is to build upon the long and productive strategic partnership between the United States and the Russian Federation in the energy field, in hopes that an enhanced and strategic energy partnership between the United States of America and the Russian Federation will promote global prosperity and security[1].

This paper aims to contribute to the work done so far by the Energy Security Sub-Group experts by providing policy recommendations for potential US- Russia cooperation in specific energy sectors and geographic regions. To outline the fields for cooperative work of two countries we have taken into account both political and economic issues. Economic factors explain the necessity of proposed ways of cooperation, but due to political reasons enlighten why countries might not choose the strategy to cooperate.

The remainder of this paper is organized as follows: part I reviews the legal framework of US-Russian cooperation in the energy sector. Part II focuses on the survey of the experts' opinions on Russian-American potential cooperation. In Part III, the oil, gas, coal, nuclear energy and renewables industries are analyzed and different possible ways of optimal cooperation on different levels are proposed. Final conclusions are presented in part IV.

The Legal Framework

Energy Security: The conceptual framework

There is a consensus among the international community with regards to the importance of energy security, as exemplified in international and bilateral agreements signed in the energy sector. More precisely, countries agree that free, competitive and open markets are essential to the efficient functioning of the global energy system[2] and accentuate that the cross-border energy transit flows through pipelines and other means of transportation should be reliable and ensured under non-discriminatory conditions for trade in energy materials, products and energy-related equipment based on WTO rules[3]. Countries should ensure the protection of foreign investments, based on the extension of national treatment, or most-favored nation treatment and protection against key non-commercial risks[4] and facilitate capital flows into power generation, including building of new, more efficient power plants, upgrading existing plants to include wider use of renewable sources, and to construct transmission lines, develop interregional energy infrastructure and facilitate exchange of electrical power, including trans-border and transit arrangements[5]. The cooperation on the creation of market data on energy sources is expected to contribute to the process of assurance of global energy security[6]. The implementation of the Joint Oil Data Initiative (JODI)[7] could potentially serve as a channel to share the information.

Russia

President Medvedev has underlined in late 2010 the necessity for the creation of an energy doctrine in 2011. The Russian president identified as the

most pressing issues the defense of the energy plants from terrorist attacks, the development of technology standards for energy plants and the policy of fast response in the case of emergency. He also proposed the creation of special organizations that will be responsible for liquidation of repercussions in the aftermath of emergency and extraordinary events.

The current strategy, which was formulated by the Ministry of Energy in 2009, assumes that in the following two decades the energy sector will be of profound importance for Russia's development in economic and social terms. The applied innovation of technologies and the increase of productivity of human resources will allow Russia to increase the welfare of citizens. In the foreign policy context, the strategy supposes the deepening of the diversification of the energy resources export structure, the assistance of the realization of complex and risky international projects on the territory of Russia, and the dialogue and cooperation with other countries on the questions regarding energy security.

The participation of foreign countries is limited in Russia. Now the law of Resources[8] supposes that if the Russian company in cooperation with a foreign company while developing a field found new resources, the license can be canceled. Due to national security reasons the participation in the competition for licenses of developing the fields of federal significance (which means fields with at lest 70 mlns tons, or 50 blns cubic meters of gas, or 50 tons of crude gold, or 500 thousand tons of copper, or the fields of the sea territories, or the fields with the resources of the carbons and rare-earth metals, or the fields that are a part of the territories with the security and defense role) is limited for the foreign companies. The company in general is not allowed to receive the license for developing and using in its interests the field if the foreign investors represent more than 10% of the shareholders of the company, or have the agreement or other opportunity to determine the decisions of the company, or have the right to assign at least 10% of the board of directors[9]. All such decisions have to be discussed individually with the Russian government.

Today Russia closely cooperates with EU and with China in the framework of the Energy Dialogue, with OPEC, GECF, and with Algeria, Bulgaria, Venezuela, Iraq, Iran, China, Kyrgizia, Kuwait, Libya, Nigeria, UAE, Saudi Arabia, Slovakia, Tajikistan, Turkey, and Ukraine in the framework of working groups with the participation of Russian Minister Shmatko. A major agreement that Russia signed with the US and recently came into force recently is the so-called 123 Agreement. The agreement is in line with the US and Russian positions adopted during the 2006 G8 Summit and which outline the necessity to reduce nuclear risks and enhance the regulation of nuclear installations. The pact is expected to fuel companies' collaboration in the nuclear energy sphere[10] by allowing US and Russian firms to team up more easily in joint ventures and by permitting U.S. sales of nuclear material and equipment to Russia. This will establish a stronger commercial basis for the nuclear relationship between the United States and Russia. Russian and US firms will be able to develop advanced nuclear reactors, fuel-cycle approaches, and cutting-edge technology that are safe, secure, and reliable.

On the international front, Russia signed the Kyoto protocol in 2005. Since it has the excess of quotas, it uses the funds raised from their sales to other countries for the financing of projects for increasing of energy efficiency.

The US

President Obama has repeatedly accentuated that the US dependency on oil constitutes a great challenge for the country. The US dependence on foreign oil will only be reduced with the development of new sources of energy[11]. In line with his goal, President Obama introduced the "Comprehensive Energy Strategy" with the aim of moving the US from an economy that runs on fossil fuels and foreign oil to one that relies on homegrown fuels and clean energy, thus strengthening the National Energy Security. He also introduced the Comprehensive Strategy for Energy Security which provided the framework for the diversification of the country's energy mix, investments in more clean energy technologies and boosting the country's domestic energy production[12]. The President also signed the Recovery Act that will contribute to the building of a cleaner, more energy-efficient economy by tapping homegrown sources of energy.[13] Additionally, the Executive order on Federal Leadership in Environmental, Energy and Economic performance sets sustainability goals for Federal agencies and focuses on making improvements in their environmental, energy and economic performance[14]. Finally, the United States Department of the Interior's Strategic Plan for Fiscal Years 2011-2016 underscores the administration's commitment for the promotion of responsible development of renewable energy and for

ensuring safe and environmentally responsible access to natural resources.[15]

At the international level, although under the previous administration the US did not sign the Kyoto Protocol, under President Obama the US did endorse its successor, the Copenhagen Protocol on Climate Change. President Obama's belief is that "Climate change threatens us all; therefore, we must bridge old divides and build new partnerships to meet this great challenge of our time.[16]". In addition, in 2009, Australia, Brazil, Canada, China, the European Union, France, Germany, India, Indonesia, Italy, Japan, the Republic of Korea, Mexico, Russia, South Africa, the United Kingdom, and the United States met as the Major Economies Forum on Energy and Climate and reaffirmed the objective, provisions and principles of the UN Framework Convention on Climate Change[17].

At bilateral level, the US fostered bilateral energy and climate partnerships with China, and India and others[18]; The US also coalesced with the other Northern American regions in an effort to reduce national and North American emissions[19].

Survey

In order to write this policy paper, the members of the group drafted a questionnaire and conducted interviews with scholars and acknowledged experts in Russia, Europe and the US. Following the conclusion of the interviews and gathering of data, we created maps based on color modeling by regional and sectoral influence of the US and Russia, in order to analyze the state-of-affairs in the different energy sectors, the advantages of each country and the potential of bilateral cooperation.

The formula we used in order to create the maps is described below:

1. The experts' values on the initial influence of Russia and USA in the regions are counted basing on the answers on questions 1-4 on historical influence (for US and Russia separately).
2. The stability indicator is counted. It includes risks mentioned in the questions 5-7, and their weights from the question 8.
3. The competition factor is counted basing on the question 9.
4. The first indicator of the region attractiveness is counted using the formula (1)*(1+(2))+(3).
5. Then we find the absolute variance of the final 2 number for Russia and US for each region.

The indicator (4) measures the attractiveness of every region to the US and Russia. (2) and (3) were used as multipliers for calculation of the potential for bilateral cooperation between Russia and US in the different regions.

The data showed which areas Russia and America thought were important. In particular, North America, Latin and South America and Eastern Europe are the regions that are of great interest for the US. Middle East is the region that is characterized by the lowest attractiveness.

On its part, Russia considers Transcaucasia, Russia and Central Asia, Southern and Eastern Europe, Western and Central Europe as important. Other regions are approximately of the same value. For the US, the Middle East gained its lowest attractiveness level.

On the final stage, we used 2 indicators - the attractiveness of the region for Russia and the attractiveness of the region for USA. We believe that if the region is very attractive, the country will do everything to take the major part without collaboration with other players. But if the region is equally attractive for 2 countries they will have to cooperate, thus the minimum difference will show the region of the most possible cooperation

6. The "bonus factor" bases on the question 10.
7. (5) then is adjusted (divided) by (1+(6)).

The greater is the opinion of the experts of the possibility for cooperation of Russia and US the smaller shall be the difference, the greater should be the potential for cooperation.

The potential for cooperation between the US and Russia in different energy sectors and geographic regions

The Oil Market

According to the forecast of the IEA[20], fossil fuels will not only remain the dominant source of primary energy worldwide, but will also account for more than ¾ of the overall increase in energy use between 2007 and 2030. Oil demand in particular is projected to grow by 1% per year on average during projected period, all the growth coming from non-OECD countries. One of the significant factors influencing the oil demand is considered to be the growing automobile demand. Developing countries are showing rising automobile sales volumes. On the contrary, oil supply is expected to slow down. The main reasons

for that are (i) reduction of developing oil fields[21], (ii) instability in the Middle East and countries in the North of Africa, (iii) implementing of strict ecological regulations. The only positive factor is the opportunity to increase the extraction in Iraq and Brazil. However, the political situation in the Middle East and Africa is more important and in the beginning of 2011, we have already seen the oil price increase above the level of $117 per barrel. The high oil prices will probably slow down the "automobilization" and the demand for oil, allowing other energy sectors to develop. For Europe the situation in the Middle East and the North of Africa means that the oil flow coming from Egypt and Libya to the countries in the Western Europe[22] has to be substituted by other countries or by other resources. The American companies will find it more attractive to increase capital expenditures in the oil shale extraction technologies as well as other sectors where large investments are necessary. The Russian oil companies risk to stay in stationary position being satisfied by the profit caused by the increased oil price, without actually creating the opportunity for future profits.

The following measures could contribute to ensuring energy security, if implemented:

1. American and Russian companies should cooperate in developing oil fields, especially shelf fields. The cooperation in Sakhalin projects and Black Sea fields with Rosneft has provided a good base for future collaboration[23]. Since the Russian oil companies often lack sufficient experience of shelf development, the cooperation with American companies will ensure the proper research and infrastructure, and the location near transport systems and oil consumers makes it especially valuable.

2. Russian and American companies should pay more attention to the oil trading development system. This will help to reduce risks of the lack of resources in force-major cases, like the stop of oil exports from Libya to the Western Europe.

3. Russian and American companies should work together in the Far East both in the oil extraction field and in supply chain systems. India, China, and South Korea are expected to demonstrate growing demands till 2030[24]. China has a great demand in energy resources as well as India that in plus has decreased its oil import taxes. The resources of the Russian Far East that are difficult to extract without innovative technologies, if extracted can be exported to neighboring countries with lower transportation costs. The development of transport system on the Far East also contributes to the potential of projects in the region.

4. Russian and American companies should increase their joint R&D programs. This can include the creation of R&D centers. The governments can also directly participate in it by stimulating universities to deepen this research area and demonstrating the benefits of sharing of the experience with overseas colleagues.

The Natural Gas Sector

Natural gas is projected to be the fastest growing fossil fuel globally to 2030. Production grows in every region except Europe. Asia accounts for the world's largest production and consumption increments. The Middle East has the world's second largest production of natural gas and the greatest consumption increments. Former Soviet Union (FSU) and African production grows strongly to meet export demand[25]. Russia, being the world's top natural gas exporter and the second natural gas producer and obtaining the world's largest natural gas reserves[26], is a key player in the global natural gas chessboard. The US is also a major player globally: it is the world's top natural gas producer and ninth natural gas exporter and ranks 14th in terms of natural gas proved reserves[27].

In order to assure energy security in the natural gas market worldwide, Russia and the US should implement a twofold strategy: the two powers should aim to avert disruptions in natural gas supplies and develop non-developed fields in order to satisfy energy demand in natural gas, which is expected to grow. The following policy recommendations can facilitate the aforementioned goal:

1. In Europe, Russia and the US should examine the possibility of integrating South Stream and Nabucco pipelines. The route of the South Stream gas pipeline proposed by Gazprom is almost identical with the route of the EU- backed Nabucco Pipeline. The reason is twofold: first, the EU members are committed to diversify their energy mix while increasing the share of renewables in order to achieve a cleaner energy future; subsequently, the demand for natural gas is not expected to grow significantly. In other words, the demand on EU's part for natural gas is not expected to grow at levels that justify the construction of two additional pipelines to serve EU energy needs. Second, the availability of natural gas sources that could fill both pipelines constitutes an additional hindrance for their realization. With regard to Nabucco, Azerbaijan has already committed to supply natural gas to the

pipeline. Yet Azeri natural gas reserves cannot meet Nabucco's needs. Iran was proposed as an alternative supplier, but this option is not attractive due to the political instability that characterizes its political arena. Concerning South Stream, it has to be accentuated that with project costs of €19-24 billion and likely overruns even from that level, the project looks financially unfeasible[28]. That said, integrating the projects would allow Russia to alleviate its dependence on transit countries and the EU to diversify its energy routes. Over the past 55 years, relations between the United States and the EU have steadily broadened and deepened so that the two are inextricably linked[29]. Therefore, the US could provide the necessary political support to a potential integration of Nabucco and South Stream Pipelines. It is recommended that mutual trust between the EU and Russian is established. Additionally, reciprocity in the bilateral relations and two-way investment are also required. That goal can be attained if the new Partnership and Cooperation agreement between the two parties includes the principles of the Energy Charter and in particular, of the transit protocol.

2. In Russia, American companies should cooperate with Gazprom in developing natural gas fields which are associated with high extraction costs. Gas reserves of major exploited deposits in the Western Siberia – the main gas producing region of the country (deposits Medvezhye, Urengoiskoye, Yamburgskoye) have been depleted by 65–75%[30]. Consequently, there is necessity of developing new gas- producing centers on the Yamal Peninsula and continental shelf of the Arctic and Far Eastern seas, in the Eastern Siberia and Far East. Russia must develop these fields to meet its contractual obligations. Despite the high costs that charecterize the development of fields in this region if compared to fields located in more hospitable locations, to develop these fields during the period up to 2012 is said to be economically viable because of their proximity to the existing gas transportation infrastructure[31]. In order to attract US investments (as well as investments from other countries) Russia needs to take measurestoward strengthening its investment climate and legal culture, in parallel with enhancing the capacity of bodies enforcing the rule of law.

3. In Northeastern Asia, and in particular in South Korea, US could serve as an arbiter between the Russian and South Korean governments and aid the discussions on energy projects. In general, diplomatic relations between Moscow and Seoul have been stagnant and have not facilitated greater cooperation in energy projects[32]. The US that enjoys great political relations with South Korea could use its leverage to persuade the country's government to sit on the negotiations table with Russia. One project that if implemented would alleviate the country's energy shortage problem is the development of the Kovykta natural gas field.

The Coal Market

According to the IEA[33], coal has had biggest increase in demand over the projection period 2008-2030, rising to 44% share in of the global generation mix. Today it has gained the 40% share of world's electricity sources, and in particular in the US 49 % of electricity comes from coal consumption. China is the leader of the world coal industry with 1552,9 mln tones oil equivalent in 2009[34]; it is at the same time the major coal consumer. However, the coal reserves in China are not very abundant and there is a possibility of coal import. On the contrary, American and Russian reserves allow for greater production. If the USA is the main supplier in the American region (although it imports from Canada and South American countries), the Asian region has many potential coal suppliers (including besides China India, Australia, Indonesia and others). Meanwhile, in 2010 the American coal exports to China has increased from 2,7 thousand tones in 2009 to 2,9 mln tones, demonstrating a growth of almost 900% [35]. Export volumes to other Asian countries have also increased: India – 52%, Japan – almost 800%, Korea – 321%. In order to promote energy security in the global coal market, the following recommendations should be taken into consideration:

1. Russian and American companies should cooperate in enhancing the eco-efficiency of coal's energy production. A major problem for the global coal industry stems from the fact that the efficiency of electricity generation while using coal is very low (approximately 35%). What is more, coal is considered to be one of the most environmentally-harmful energy sources and giving the increasing constraints relating to the protection of the environment, such innovation in the global coal industry is absolutely required.

2. Russian and American companies should cooperate in the development of motor fuels and lubricants production systems. Considering the possible forecast of increasing oil and gas prices, coal will be able to attract more attention and the insufficient development of production of lubricants might become

the constraint.

3. American companies can participate in the development of Russian energy clusters that include different types of productions and transport systems to the points of sale. Today the geographical location of coal extraction in Russia is not convenient because of the big distance for transportation[36]. The Federal Tariff system has determined the prices for transportation forming the prices for coal. The Ministry of Energy made the research, that has shown that the maximum increase of transportation costs allowing the coal companies functioning is 2,5-3 times, that corresponds to the predicted inflation rate in Russia till the year 2030[37]. Thus, the development of the centers with different types of production (including coal extraction, metal, and energy production) in one option can optimize the cost structure of such projects.

4. Potential cooperation can take many forms, such as the creation of alliances, or the registration of newly- established companies with the participation of Russian capital, that can include M&A deals with Russian companies[38].

5. The Russian government should consider the opportunity to cancel the import tax on coal to increase the competition in the industry. Russia does not only export coal, but also imports some deficit types of coal, particularly from the USA (Mechel for example). Once the research on the more efficient coal and lubricants production starts actively, the tax cancellation rather increases the perspectives for coal sector development than threatens it.

6. The transportation system should continue to develop in both countries. This will allow the operation of companies on spot basis. Although sales of most types of coal is still based on contracts, the contract periods are getting shorter. Recently, spot sales system has started to be applied by companies especially for steam coal for power generators. In Russia ports have played important role in transportation of coal. In particular, on Far East, 4 major ports ensured approximately half of the turnover of the sea transportation: Port Vostochnyi (the leader in the area with 20-30% of market share in 2005-2009), "VMTP", "NMTP", "Vaninskiy MTP"[39]. The development of infrastructure of these ports will increase the turnover and lower the costs of companies making supplies more convenient for both suppliers and consumers. One of the possible ways of Russian government support is introduction of the form of discount on the credit rate for the projects of infrastructure development of transport companies should be implemented. The USA and Russia should consider the slurry pipeline transport scheme. The costs of transportation by the railways are rather high and in case of long distances (which is more frequent for Russian situation), the slurry pipeline can be a proper escape as it has been in China and the USA. The cost-benefit analysis, however, is necessary.

The Civilian Nuclear Energy Industry

In 2009, global nuclear output dropped by 1.3%40. Currently, 29 countries operate 441 plants, with a total capacity of 375 GW(e). A further 60 units, totaling 58.6 GW(e), are under construction (as of 26 August 2010). In Western Europe, nuclear electricity accounts for almost 27% of total generated electricity. In North America and Eastern Europe, it is approximately 18%, whereas in Africa and Latin America it is 2.1% and 2.4%, respectively. In the Far East, nuclear energy accounts for 10% of electricity generation; in the Middle East and South Asia it accounts for 1%[41]. Nuclear generation is attracting new interest as countries seek to increase the diversity of their energy supplies and improve their energy security[42], as well as because of the significant environmental advantage that it holds.

Taken that the number of countries which are willing to develop civilian nuclear energy programs is expected to grow, in combination with the fact that peaceful nuclear cooperation and proliferation are causally connected because of the dual-use nature of nuclear technology and know-how[43], Russia and the US should work towards promoting nuclear energy programs for civilian purposes, while simultaneously ensuring that the expansion of peaceful nuclear energy programs will not result in a nuclear weapons spread. In the 2009 Prague Summit, Russian President D. Medvedev and US President B. Obama pledged that "together, we [Russia and the US] seek to secure nuclear weapons and materials, while promoting the safe use of nuclear energy for peaceful purposes"[44]. It has to be noted, however, that following the Fukushima events, it is estimated that the "nuclear renaissance" will slowdown in the short term. Yet, taking into account that at some point in the future the production of fossil fuels will reach its peak in the medium and long terms in combination with the fact that not all countries have the potential to harness nuclear energy, as well as the need for a diversified energy mix, the civilian nuclear energy industry will show signs of growth

again. Additionally, the Fukushima nuclear accident illustrated the need for better risk management in case a nuclear accident occurs.

In line with their commitments, and taking into account the recent entry into force of the "123 Agreement" between the US and Russia that provides a significant stimulus for strengthening the bilateral cooperation in the civilian nuclear energy industry, Russia and the US should implement the following policy recommendations in order to contribute to assuring energy security in the nuclear energy field worldwide: In Russia and the US , the following should be implemented:

1. Russia and the US should raise their research and development expenditures and develop joint projects for the advancement of technology in the civilian nuclear engineering sector. The main goal should be the development of new technologies, the use of which will decrease nuclear generation costs, as well as the development of proliferation-resistant technologies.

2. Russia and the US should increase their rate of technology and knowledge exchange. Training activities for Russian and American nuclear scientists and engineers should intensify. Russia leads the world in gas centrifuge uranium enrichment technology and cheap technologies for processing weapons-grade uranium into low-enriched uranium for civilian purposes as well as for recycling and storing nuclear fuel waste[45]. At the same time, the United States is one of the world's top two leaders in the creation of new protected reactor technology, energy efficient equipment, and environmental safety and transportation systems[46].

3. Russia and the US should work together towards developing a closed nuclear cycle. Russia has already expressed its willingness to import, store, and reprocess spent nuclear fuel controlled by the US and repatriate it. Russia is one of the world leaders in reprocessing spent energy reactor fuel[47]. At present, the US controls around 75 per cent of spent nuclear fuel worldwide, but reprocessing the spent fuel of nuclear power reactors is banned[48] within the country.

4. In Central Asia, Russia and the US should cooperate with Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan and help them manage and dispose their radioactive waste.

There are more than 800 million tones of waste from mining and processing of radioactive sources stored at tailings sites and at mining waste dumps in Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan[49]. In addition, the two countries should work with Kazakhstan and help the country to manage its spent fuel. Kazakhstan inherited a Soviet BN-350 fast reactor along with several tons of lightly irradiated plutonium[50]. The precedent has already been set in the past, when highly enriched spent fuel from research reactors in Kazakhstan and Uzbekistan was transferred to Russia with US support. In order to prevent the spread of fissile materials from the region, Russia and the US could create a repository in Semipalatinsk in Kazakhstan. In case the facility is built, spent fuel not only from the Central Asian republics, but from other countries too can be stored there.

5. In South- East Asia and Africa, Russia and the US can jointly manufacture small reactors and build nuclear power plants, since these regions require small nuclear reactors to satisfy their energy needs. In Africa, potential customers are Nigeria, Algeria, Tunisia, Morocco, Egypt, Ghana, Uganda, Namibia, while in South-East Asia potential for cooperation exists in Philippines, Indonesia, Thailand, and Vietnam. It has to be noted, however, that taking into account the risks associated with the geographical location of the aforementioned countries and/or the political instability on the domestic front, security standards in the nuclear establishments should be extremely high.

6. In the Middle East, Russia and the United States should work towards preventing Iran from acquiring sensitive technologies in support of its nuclear program, taken the concerns that the international community has raised with respect to the intent of the country's nuclear program. In order to attain this goal, Russia and the US should identify individual scientists who are working with the Iranian regime and prohibit them from cooperating and assisting Iranian scientists to acquire technological know-how, which will allow them to reach the threshold of acquiring a bomb.

The Renewable Energy Market

Russia is greatly underutilizing renewable energy sources. Less than five percent of its total primary energy supply comes from renewable energy.[51] Russia lags behind the European Union and China, who have already taken a very proactive approach to developing renewable energy, even exceeding targets.[52] However, as the value of nonrenewable resources continues to rise, Russia stands to gain tremendously from its natural resources. As Anatoliy Chubais, the head of ROSNANO and ex President of RAO-EES, said, renewable energy is the important strategic direction of the

development of the Russian economy, but it does not and must not substitute neither fuel power generation, nor nuclear power generation sectors[53].

The differences between US and Russian utilization of renewable energy is vast and is a major area for collaboration. Whereas the United States reports that renewable energy is up to ten percent of the total domestically produced energy, Russia's renewable sector is undeveloped in comparison to that of the US.[54] Like Russia, the United States also gets most of its renewable energy from hydropower and the American government is proactively seeking to increase renewable energy production.

1. Russia and the US should work towards developing their better and cleaner energy alternatives so as to move away from being so resource-dependent. Renewable energy is a great option, but neither country has engaged with that sector to the same degree as Germany, China, and other renewable energy leaders.

2. Hydroelectric plants in Russia should be modernized to ensure the safety of the plant and the energy supplies in the regions. New plants will be difficult to be built in today's conjuncture levels. The World Commission on Dams (1998-2000) concluded that "water infrastructure projects, including hydropower schemes, had too often been developed at an environmentally or socially unacceptable cost"[55]. The modernization is necessary especially in regions that are wholly dependent on the hydro plants (the Sayano Shusheskaya accident showed that besides monetary costs and 75 people died, thousands people and plants were found without electricity[56]). By modernizing its hydroelectric plants, Russia can also increase their popularity and demand. Hydroelectric power is truly a source of great potential for Russia, should it choose to increase its renewable energy supplies. Moreover, since hydropower is one of the cheapest sources of electricity, many industries can gain and save from an expansion of hydropower. Currently, the majority of dams in the US are concentrated in a few regions, but expansion is possible. Therefore, Russia and the US can both increase dam-building and make the new dams safer and more efficient.

3. Overall, renewable energy should be at a priority for both the United States and Russia. Although the rise of renewable energy can be seen as a phenomenon that may eventually undermine Russia's current standing in global energy security, the proper harnessing of this sector can reap tremendous benefits for both Russia and the United States. Russia and the United States need to consider the future supply and demand of hydrocarbons. Hydrocarbons production will not remain at its current levels and both nations must be ready to supply energy through alternate energy sources.

Russia and the United States need to find incentives for companies in the private sector to work together and subsidize alternative energies. This can include the promotion of the electric vehicles sector development. Overall, the development of the renewable energy should not only be promoted by government subsidies and tax breaks.

Conclusions

At present, energy security is at the forefront of global concerns. Energy security is inextricably linked with economic growth and growth sustainability, and it constitutes a crucial component of national security of each and every nation. The US and Russia, are global energy players and as such, have both the moral obligation and responsibility to work towards assuring energy security worldwide. The two countries have already taken steps toward this direction.

Both the US and Russia acknowledge the fact that today the word's economy is totally dependent on fossil fuels. According to current estimates, demand for oil is expected to decrease in the future. The major problems in the oil market stem from the fact that oil production is expected to reach its peak soon and the location of oil deposits in unstable geographic locations.

The fact that environmental concerns now stand front and center of energy worldwide should also be taken into account. Russia and the US should jointly develop oil fields that are required to satisfy the energy needs of countries.

Concerning the natural gas sector, supply disruptions and a projected growing demand for natural gas are the two issues that Russia and the US need to address. In order to do so, the two countries should exploit natural gas fields necessary to substitute for the declining natural gas output.

Coal is also a very popular energy source and its share in the energy mix is expected to rise in expense of natural gas and oil. Yet, as is the case with oil, coal is not environmental-friendly source. Therefore, Russia and the US should work to enhance its production eco-efficiency, so as to alleviate its repercussions for the climate, and develop new means for its transportation to render coal accessible to more

countries and with lower costs.

The cooperative work on projects in other countries is often determined by the political strategies of countries. According to the opinions of experts, that participated in the interview conducted by the members of the group, the cooperation of the US and Russia is most possible in the European region and in the Middle East.

As this paper has demonstrated, Russia and the US recognize the threat posed to the international security by the climate change. For that reason, both countries aim to promoting cleaner technologies and sources of energy. That said, it is apparent that nuclear energy and renewables are on the top of the countries' agendas. With regard to the nuclear energy, Russia and the US should work toward reducing nuclear energy generation costs, strengthening security standards in nuclear establishments around the world and developing technologies that are resistant to proliferation, since civilian nuclear programs can provide the technological know-how, facilities for the development of a nuclear weapons program. Regarding the renewables sector, Russia and the US should develop programs to subsidize alternative energies.

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