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Russian Deliberate River Crossings: Choreographing a Water Ballet

By Dr. Lester W. Grau

The Russian army is primarily a regional force, intended for employment in Eurasia; consequently, its equipment is designed specifically for that environment, which includes large expanses of woodlands and tundra intersected by broad rivers and massive swamps. Large rivers, canals, and lakes dominate Eurasia and have long served as major arteries of commerce and industry, defensive barriers, lines of communication, and avenues of advance.[1] In central and eastern Europe, an advancing or withdrawing force can expect to encounter a 6-meter-wide water obstacle every 20 kilometers, up to a 100-meter-wide water obstacle every 35–60 kilometers, a 100- to 300-meter-wide water obstacle every 100–150 kilometers, and a water obstacle more than 300 meters wide every 250–300 kilometers.[2] Consequently, most vehicles used by Russian ground forces have some amphibious capability and can, at least, ford reasonable water obstacles. Troop carriers and infantry fighting vehicles are amphibious and can be propelled across the water using tracks or wheels for forward momentum. Russian tanks can be driven across water obstacles of less than 5 meters deep and 1 kilometer wide using a snorkel to provide oxygen to the crew and engine. Weather and seasons also affect water crossing. Russia is a northern country, and severe winter weather is a normal condition for training and combat. Therefore, Russians regularly train to deal with crossings during spring and autumn flooding (with floating ice), under conditions of low water levels and high banks in summertime, and during winter freezes.

Bodies of water usually hinder and impair an attacking force but supplement the efforts of a defending force. The attacking force must suppress a ground defense force covering the crossing site and/or enemy aviation.[3] The number and types of crossing sites depend on the nature of the water obstacle, the composition of the crossing forces, the available crossing means, and the intentions and laydown of the enemy force. The purpose of a crossing attack is to seize a lodgment on the far bank and penetrate enemy defenses. If tanks are unable to ford, they cross by submerged snorkeling or via ferries or pontoon bridges. Second-echelon forces, artillery, support vehicles, and follow-on forces cross on ferries and on pontoon bridges.

Russians prefer to cross water obstacles from the march to avoid any major halts and massing of forces within enemy artillery range. Crossings are attempted at multiple points along a broad front in order to overwhelm enemy defenses and maintain tempo. The crossings are preferably conducted at night; however, this is difficult (and, in the case of tank snorkeling, forbidden). Particulate smoke and electronic masking are used extensively to cover assault crossings, particularly those conducted during daylight hours.

Russians train for two types of water crossings—unopposed and opposed. An unopposed (hasty) crossing is conducted against a lightly held enemy defense, and an opposed (deliberate) crossing is conducted against a prepared enemy defense.

A hasty water crossing involves the rapid crossing of forward combat forces with an accompanying air assault or an attack from the march to seize and secure a far shore bridgehead. The lead battalion pushes its main body across using amphibious vehicles with snorkels and quickly bridging or ferrying the remainder of the force to resume the offensive. Fording vehicles are more likely to be used in a hasty crossing than in a deliberate crossing because they allow the force to continue across the river without pausing to acquire other crossing means. The hasty crossing is discussed in the May–August 2018 issue of *Engineer*.[4] When the enemy is defending the river with well-prepared defenses, much more force is required to overcome the defenses and a deliberate crossing is necessary.

A deliberate water crossing is conducted when an enemy has established sufficient defense to offer significant resistance to the crossing of a water obstacle. The deliberate crossing is considered the most important and complex part of an offensive action.[5] It is generally conducted at a site where the enemy defense is weaker than general but

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still supports the overall scheme of maneuver. A deliberate crossing is normally conducted as an attack from the march. Should the initial attack fail or situations dictate, the main force may need to close on the water bank to prepare for the crossing.[6] Should a Russian attack be stopped at the edge of the water, the deliberate crossing may be conducted by those stalled forces that are in contact or, preferably, by a follow-on force attacking from the march through the stalled Russian force (since tempo is easier to maintain than to initiate). Artillery support is essential for a deliberate crossing. Where possible, artillery is moved forward, where direct fire and low-trajectory fire can be provided.[7]

The engineer battalion that is organic to the Russian maneuver brigade has four heavy mechanized bridgelayer (TMM-3) or truck-mounted scissor-bridge (TMM-6) sets for bridging up to 40 meters and a PP-61 pontoon bridge capable of carrying 60 tons on a 268-meter bridge, 90 tons on a 165-meter bridge, or 120 tons on a 141-meter bridge. It takes less than an hour to emplace a PP-61 pontoon bridge. Six BMK-255-1 cutter vessels are used to help assemble and maintain the bridge position. The vessels can also serve as tugboats, should pontoon sections be used as ferries. The battalion also has seven PTS-2 tracked amphibious transports. Additional bridging assets are available at army level.[8] The PMM-2M tracked amphibious bridging ferry has also been introduced into some engineer battalions. It can carry 42.5 tons and can be linked with other vehicles to form a bridge. A 210-meter-long PMM-2M bridge was constructed under fire across the Euphrates River in Syria in 2017. The bridge remained in position until February 2018, when it was dismantled by spring flooding.[9]

The steps in conducting a deliberate river crossing are—

Step 1. Destroy the defending enemy, which is facing the water obstacle.

Step 2. Approach the water obstacle, and seize the crossing or far bridgehead by air assault and/or vehicle fording attack.

Step 3. Cross the main body using table of organization and equipment (TO&E) systems, and develop the offensive on the far shore.

Step 4. In the event that the offensive begins on the near shore, cross under cover of artillery and aviation support to break through the enemy defenses and develop the offensive into the depth and flanks of the enemy.[10]

Coordinating a deliberate crossing requires—

- Choreography of artillery preparation and supporting fire.
- Aviation strikes.
- Air assaults (to seize the far bank).
- An attack, from the march, that puts the first-echelon infantry fighting vehicles and/or personnel carriers on line shortly before reaching the near bank so that they can cross simultaneously.
- A separate tank crossing conducted by snorkeling or crossing on a pontoon bridge or on ferries.
- A camouflage and deception effort.
- A bridging effort.
- The development and continuation of the advance on the far shore.

The bridging effort requires—

- Engineer reconnaissance support.
- Crossing sites.
- Route selection.
- Construction.
- Traffic control.
- Vehicle and casualty evacuation.
- Mine clearing.
- Camouflage.
- The continuation of the attack (and the next water obstacle).

The goal of river crossing is to maintain the tempo of the attack—not to stall on the near or far bank.[11]

Air defense assets are positioned forward to provide cover for hasty and deliberate crossings to prevent aerial interdiction of vehicles on or in the river, where they are most vulnerable. The initial attack is conducted by air assault and/or motorized rifle forces crossing the water with wheeled infantry personnel carriers (similar to the Stryker) or tracked infantry fighting vehicles (similar to the Bradley) firing onboard weapons as they cross. Air support during the crossing of a water obstacle often varies from the standard Russian airborne and air assault pattern. Russian airborne and air assault forces are 100 percent mechanized, and infantry carriers, artillery, and support vehicles accompany the assault. The airborne or air assault force usually drops some distance from the objective, assembles, mounts its vehicles, and conducts a march and mounted attack against the objective. This may not be possible in a company or battalion size parachute drop or air assault, and many vehicles may need to join the force later. Consequently, the main force should cross and link up with the company or battalion size air assault force within 2 hours of insertion.

The main ground force advance is usually led by a battalion size advance guard, with a mission of rapidly crossing the obstacle and developing the beachhead for the main body. The force often resorts to reconnaissance by battle in order to determine the parameters and strength of the enemy defense.[12] The advance guard may be stopped at the edge of the water or may succeed in crossing. Depending on the success of the advance guard, the first echelon of the main force may swim across the obstacle in attack formation or in platoon columns. Figure 1 shows an example of engineer support on an assault crossing. In this example, there is no airmobile insertion; rather, artillery forces are conducting heavy fire against the enemy on the opposing shore. The brigade launches an attack from the march using its advance guard battalion. Two motorized rifle companies, led by two tank platoons, conduct the attack. The tank platoons take up firing positions and engage enemy targets. The brigade's MT-12 "Rapira" 100-millimeter antitank battery takes up firing positions to the north and south of the crossing sites and engages enemy targets. The advance guard battalion commander sets up a command post in a central location for observation and control. Brigade traffic controllers are in position to direct crossing traffic where it needs to go—and when. The mounted companies arrive in attack formation and cross the river while firing their on-board weapons. Emerging on the far bank, the companies engage enemy shoreline positions and, at the southern crossing site, breach a minefield using the standard vehicle mine plow or the UR-83 Mine-Clearing Line Charge System.[13]

The remaining motorized rifle battalions are capable of fording; however, tanks, artillery, supply and support vehicles and many of the air defense assets need to cross by bridging or ferrying. Tanks, howitzers, and ammunition are high priorities for expanding the bridgehead and destroying the enemy. If the water depth and bottom composition permit, tanks can ford the water obstacle; however, they do not normally do so if close combat is ongoing on the far shore. Tanks are often ferried on pontoon sections. It normally takes a half hour to ferry a tank battalion across a medium-size river. The PTS-2, which can carry up to 10 tons, is used to transport trucks and smaller vehicles, while PMM-2M bridging ferries can carry 42.5 tons each and are used to transport tanks and heavy artillery. A well-trained engineer company can span a 268-meter river in less than an hour. The brigade commander decides whether to cross by bridge or ferry or both. The commander's decision is based on maintaining the tempo of the advance of the brigade and the counterattack capability of the enemy. Crossing a wide river under broad daylight is risky, and it is best not to ferry across until a large bridgehead has been established. Bridges are vulnerable and demand intensive air defense artillery coverage and effective counterbattery fire. Ferry crossings are less vulnerable than bridge crossings, but take longer. During conflict, temporary bridge sites need to be frequently shifted. Ferry crossing sites can be shifted rapidly. Russians usually cover their bridging sites with particulate smoke.[14]

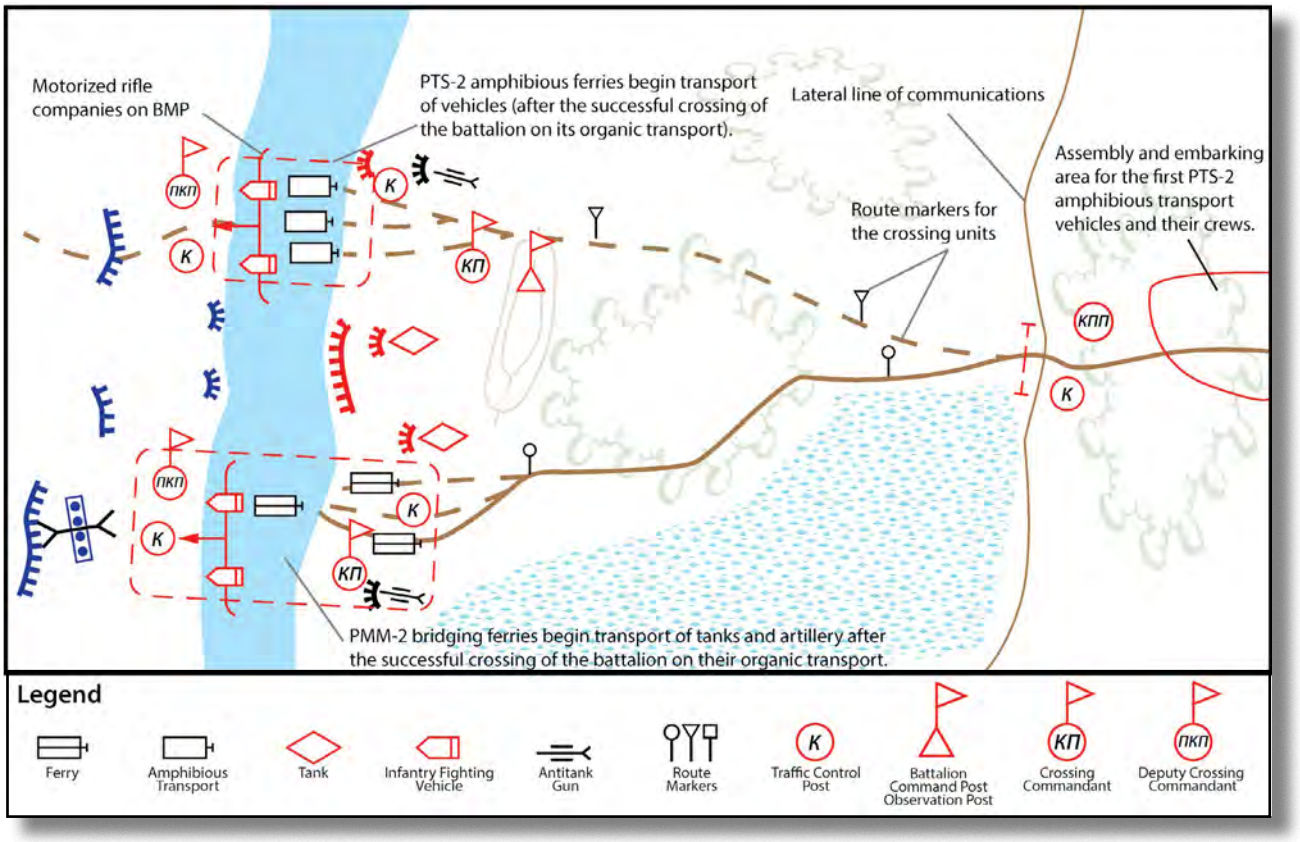

Figure 1. Engineer support of an assault crossing

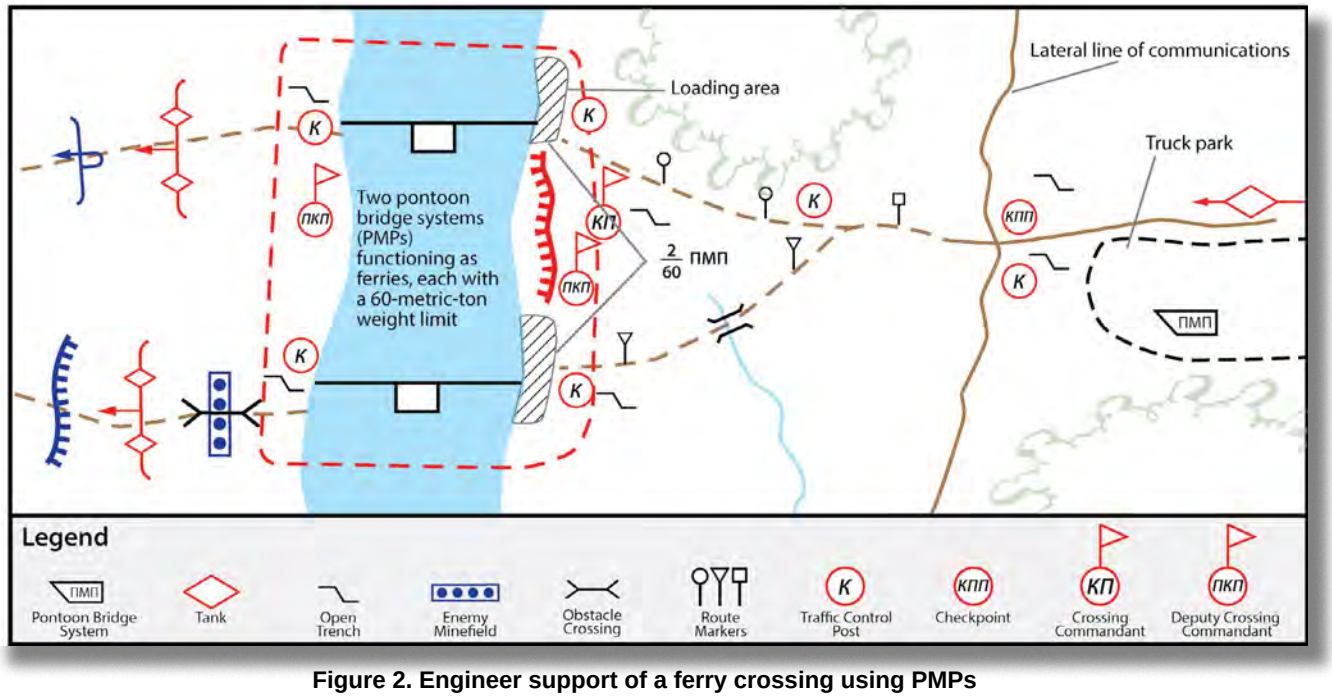

Figure 2. Engineer support of a ferry crossing using PMPs

In the scenario shown in Figure 2, the commander decides to send the remaining two motorized rifle battalions across the river and ferry the tank battalion across during the next half hour. PTS-2 moves air defense batteries, a battery of BM-21 truck-mounted multiple rocket launchers, the electronic warfare company, and a medical company platoon across the river. Once the tank battalion has crossed, the bridging company continues reduced ferrying operations.[15]

The ferry effort involves using the pontoon bridge systems to transport the tanks across the water obstacle to build up firepower and mobility on the far shore. The crossing entrance and exit points should be no narrower than 5 meters, and the bank at these points should have no more than a 10 percent slope.[16] Traffic control regulates the movement of vehicles to the loading sites. Two ferry sites are normally selected for traffic control and to lessen interdiction by enemy artillery. If a combination of wheeled and tracked vehicles is being ferried across, the tracked vehicles are often directed to one site, while the wheeled vehicles are directed to another site since tracks tend to tear up the banks. Route markers are posted on the trails leading to the loading sites.

The goal is to spend as little time as possible loading and unloading vehicles to avoid loitering in the open while waiting to cross. Units waiting to cross should disperse into waiting areas of up to 1.5 square kilometers for a company and up to 10 square kilometers for a battalion. The waiting areas should support camouflaging and include nearby areas in which to hide crossing reserves and unloaded trucks. Patrols and dug-in outposts from the units secure the waiting areas.

The bridging effort may initially involve clearing bridging sites of mines. During initial engineer reconnaissance missions, special attention is paid to the banks and reconnaissance team members look for easy access to the water and a gently sloping entrance/exit. They examine the ground along the shore to determine whether it is firm enough to support the passage of heavy equipment. A narrow width and reasonable current are desirable. The selected area should be fairly compact and contain sufficient roads to quickly move traffic.

Traffic controllers are posted where needed to keep the forces on the correct road, properly spaced, and moving at the prescribed speed. Truck columns, mountain vehicles, snow vehicles, swamp vehicles, and mixed track, and wheeled-vehicle columns move at the rate of 15–30 kilometers per hour. The distance between battalion columns is usually 2 to 3 kilometers, and the distance between vehicles is 20 to 25 meters. However, if the enemy has high-precision weapons, the distance between battalion columns is decreased to 1 kilometer and the distance between vehicles is increased to 100–150 meters. Recovery vehicles are posted on both sides of the crossing and assigned the mission of keeping the columns moving (see Figure 3, page 32). They are later used to tow inoperable vehicles to repair sites.[17]

Bridging allows second-echelon, artillery, supply, and support vehicles to cross in march column. Once a functioning pontoon bridge is in place, nonmaneuver brigades will want to use it. It is tempting and usually expedient to leave the pontoon bridge in place and continue to use it in support of the operation. Pontoon bridges can function effectively for months; however, they are prime targets and easily taken out of commission by artillery and aviation attacks. Furthermore, the brigade will not want to lose its bridging assets, so arrangements need to be made to either transfer assets or exchange engineer pontoon bridge companies to continue the advance. The optimum solution is to replace the pontoon bridge with a more permanent bridge from an army level

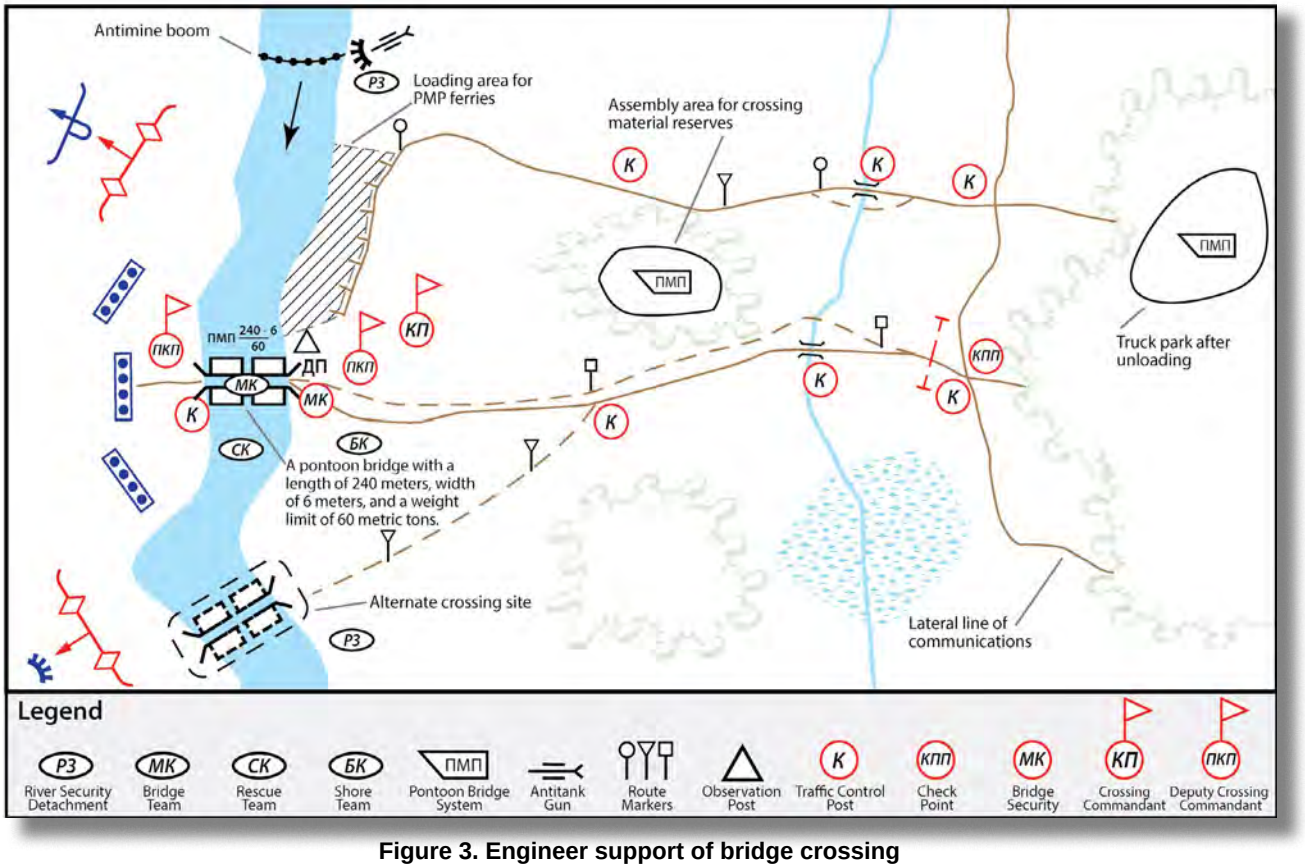

Figure 3. Engineer support of bridge crossing

engineer brigade as soon as possible. This, of course, would require a long-term deployment of air defense assets for protection.

Endnotes:

[1]Lester W. Grau and Charles K. Bartles, *The Russian Way of War: Force Structure, Tactics, and Modernization of the Ground Forces,* Foreign Military Studies Office, Fort Leavenworth, Kansas, 2017, p. 309.

[2]Ibid, p. 311.

[3]Dimitri V. Shunyakov et al., *Water Crossing: Student Textbook*, Ural University Press, 2017, p. 3.

[4]Charles K. Bartles, "The Russian Approach to a Battalion Hasty River-Crossing Assault," *Engineer,* May–August 2018, pp. 57–61.

[5]A. F. Bulatov, "Forcing Water Obstacles," *Military Encyclopedia*, Vol. 8, Ministry of Defense of the Russian Federation, Moscow, 2004, p. 276.

[6]Shunyakov et al., p.18.

[7]It is difficult to simultaneously conduct close air support and artillery support in the same area. Mortar fire must be shut down and air defense fires checked or curtailed. Direct fire and low-trajectory artillery fire permit the simultaneous use of close air support under emergency conditions. Direct artillery fire normally works quicker and more accurately than indirect fire.

[8]Grau and Bartles, pp. 312–313.

[9]"Russia has Deployed PMM-2M Amphibious Bridging Ferry in Syria," Army Recognition Group, September 2017, <https://www.armyrecognition.com/september_2017_global_defense_security_news_industry/russia_has_deployed_pmm-2m_amphibious_bridging_ferry_in_syria.html>, accessed on 10 September 2019.

[10]Bulatov, p. 277.

[11]Ibid.

[12]For further exploration of reconnaissance by battle, see the article entitled "Reconnaissance in Force Russian Style," by Lester W. Grau, *Armor,* Winter–Spring 2018.

[13]Shunyakov et al., p. 60.

[14]Ibid, p. 68.

[15]Ibid, p. 69.

[16]Ibid, p. 66.

[17]Ibid, pp. 69–75.

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Editor's Note:

Map illustrations provided by Mr. Charles K. Bartles.